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WL-TR-92-1051

ELEVEN YEARS OF IONOSPHERIC SCINTILLATION FADING DATA FROM TWENTY GREENLANDIC STATIONS -APPENDICES

A.L. Johnson Information Transmission Branch System Avionics Division

May 1992

Final Report for January 1980 - January 1990

Approved For Public Release; Distribution is Unlimited



AVIONICS DIRECTORATE
WRIGHT LABORATORY
AIR FORCE SYSTEMS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433-6543

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This technical report has been reviewed and is approved for publication.

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3 ABSTRACT (Continue on reverse if necessary and identify by block number)

Radio communications in the polar region are subject to periodic outages due to rapid density fluctuations in the Arctic ionosphere. In order to evaluate the effect of solar activity on these outages, the messages from an extensive network of unmanned automatic meteorological stations in Greenland were recorded. In a joint project between the Danish Meteorological Institute and the U.S. Air Force Wright Laboratory, the recorded data were reduced and analyzed to derive bit-error-rate and missed message statistics. These data are summarized in hourly, daily, monthly, and yearly plots for 20 mid-latitude, auroral, and polar station around Greenland. This report contains the Appendices with 100 station years of data. A description of the experiment and data analysis is contained in WL-TR-92-1050.

FOREWORD

The work reported in this Technical Report was accomplished between 1985 and 1991 under the Advanced Space Communications Work Unit, 12270126. This effort was based on the data and support provided by the Danish Meteorological Institute in Copenhagen, Denmark. The assistance of Flemming Jensen, Kris Damgaard, and Jorgen Taagholt was essential in the successful completion of this effort. The data analysis assistance of Roger Miniard and Steve Brown of the 4950th Test Wing, Test Analysis Division, WPAFB OH was also essential in completing the study.

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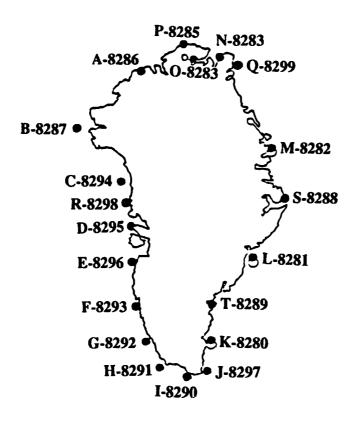
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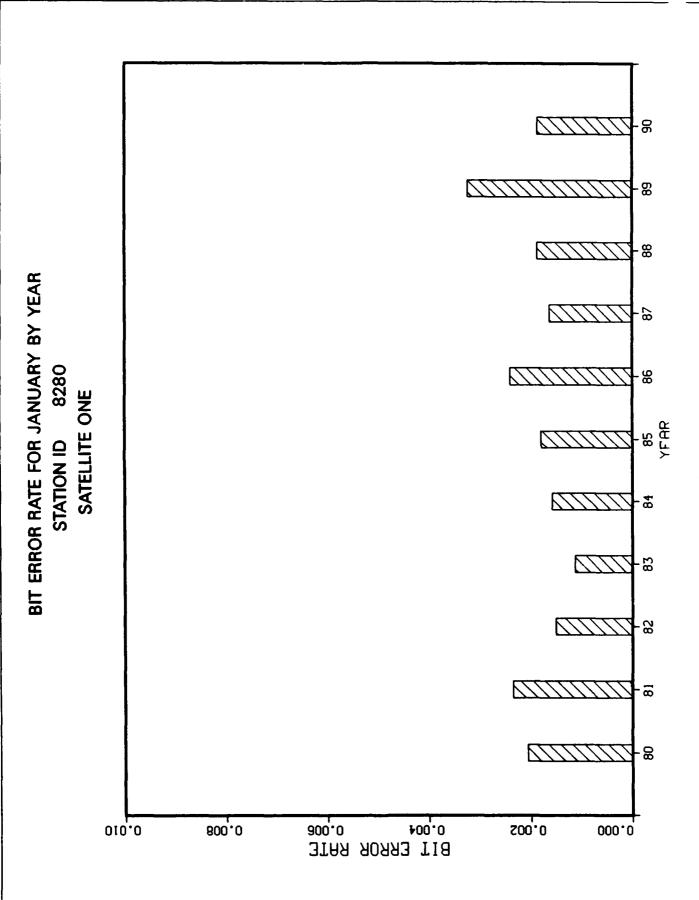
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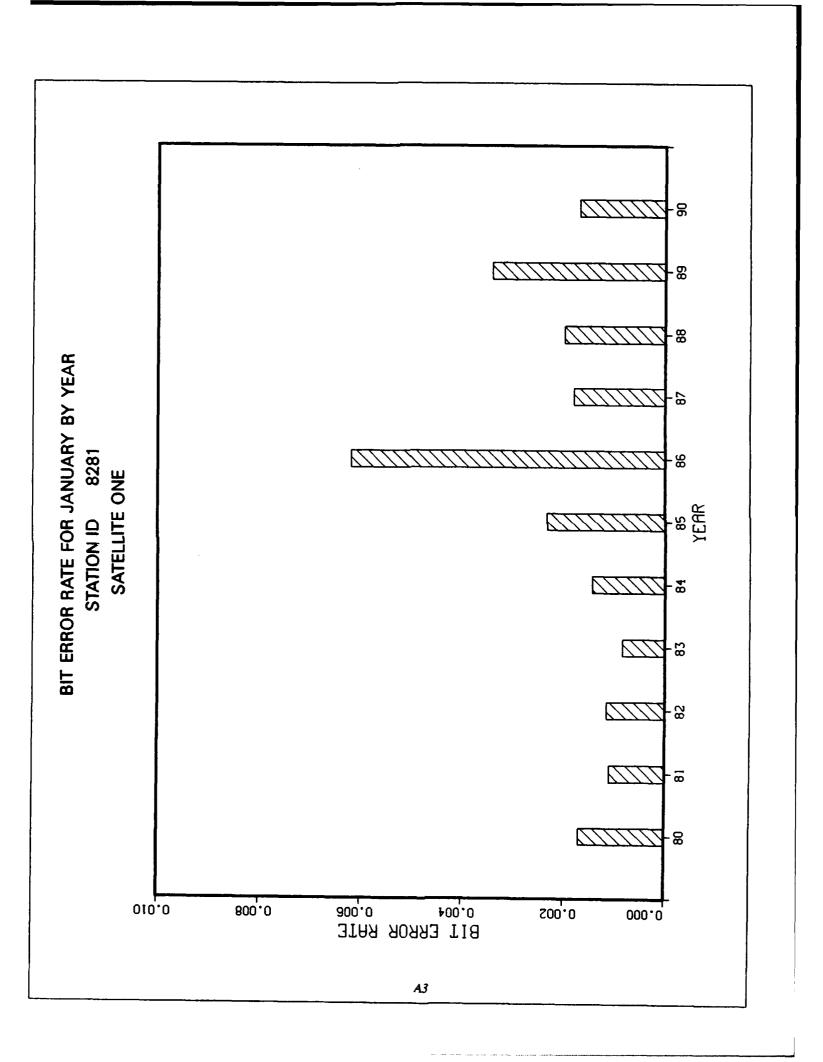
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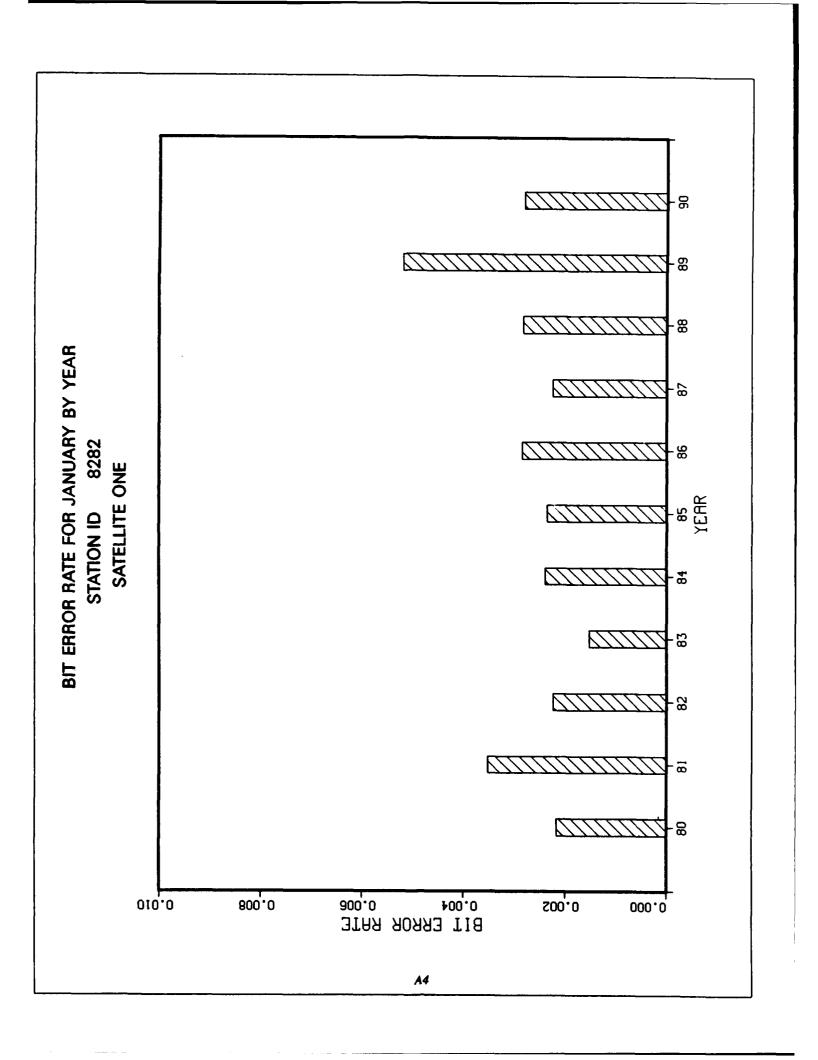
YEARLY BIT-ERROR-RATE DATA FOR JANUARY 1980 - JANUARY 1990



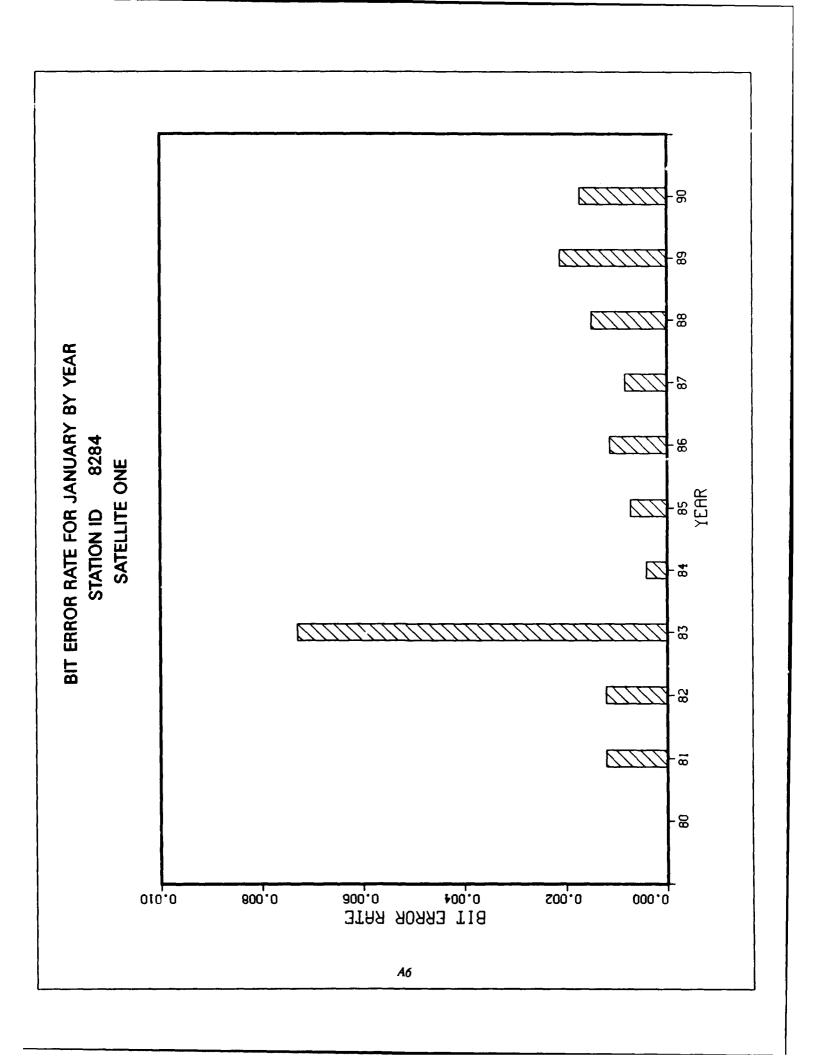
	Station	Location	WMO-NR	Argos-NR	Established
A-	Hell Lend	81 *44 'N, 59 *00 'H	04-207	8286	jul.1982
B-	Carey Ser	76*38'N,73*00'W	04-203	8187	Aug. 1979
C-	Edderfugleser	74°02'H,57°49'W	04-208	8294	Sep.1981
D-	Mugssueq	70°41'N,54°37'W	04-214	B2 9 5	Aug. 1982
E-	Agto	67*47'N,53*58'W	04-228	8296	Aug. 1983
F-	Sioralik	65*01'N,52*33'W	04-242	8293	Jun. 1983
G -	Frd.håbs Isblink	62°34'N,50°25'W	04-253	8292	Jun.1982
H-	Munerssuit	60*46'N,48*25'Y	D4-266	8291	Jun. 1981
I-	Angissoq	59*59'H, 45*12'Y	04-285	8290	Jun. 1981
J-	Prins Chr.sund	60°02'H,43°07'H	04-390	8297	Okt.1982
K-	Ikermiarssuk	61*56'N,42*04'W	04-381	8280	Aug. 1978
L-	Aputiteq	67*47'N, 32*18'W	04-351	8281	Aug. 1978
M-	Daneborg	74-18'N, 20-13'W	04-330	8282	Aug. 1978
N-	Station Hord	81-36'N, 16-40'W	04-312	6263	Sep.1979
0 -	Kap Hereld Holtke	82*09'N, 29*53'W	04-305	6284	Aug. 1979
P-	Kep Morris Jessup	83-40'N, 33-22'W	04-301	9295	Jul. 1979
S -	Kap Tobin	70*25'H,21*58'W	04-340	8288	Aug. 1985
T-	Ikermit	64*47'N,40*18'W	04-373	8289	Okt.1986
Q-	Krøyers Holme	80-41'W, 13-55'W	04-313	8299	Jul.1984
R-	Upernavik	72*47'H, 56*10'W	04-209	8298	Aug. 1984

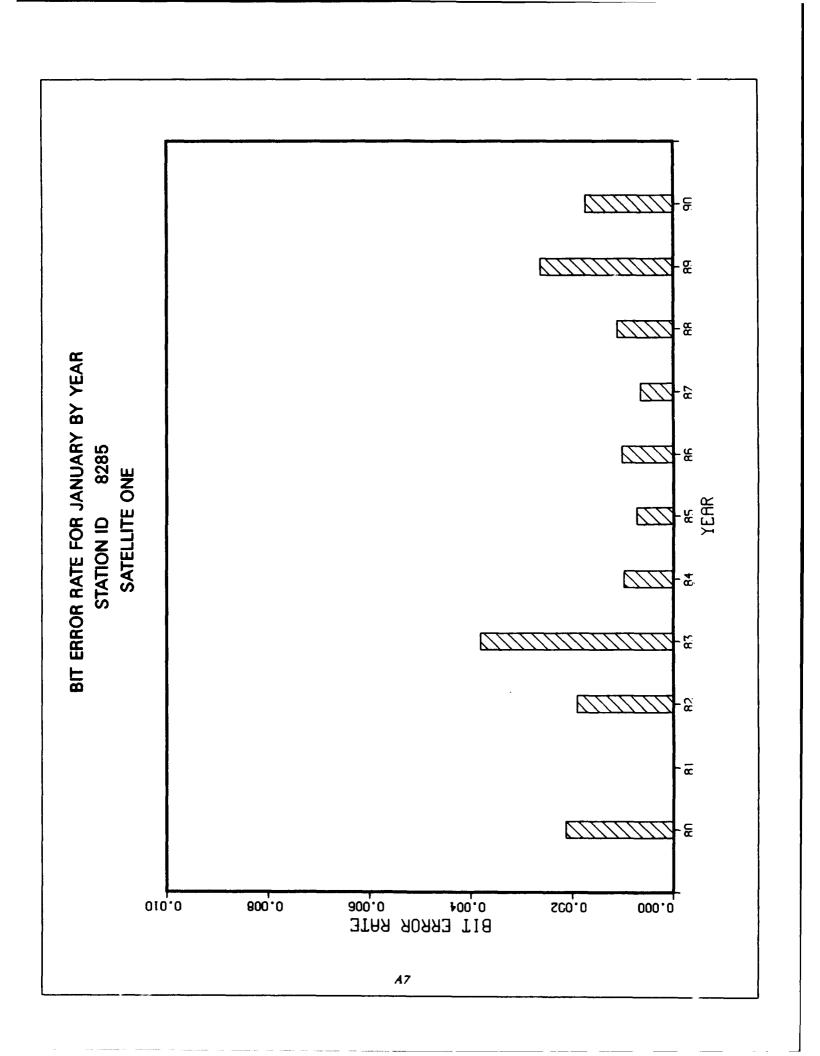


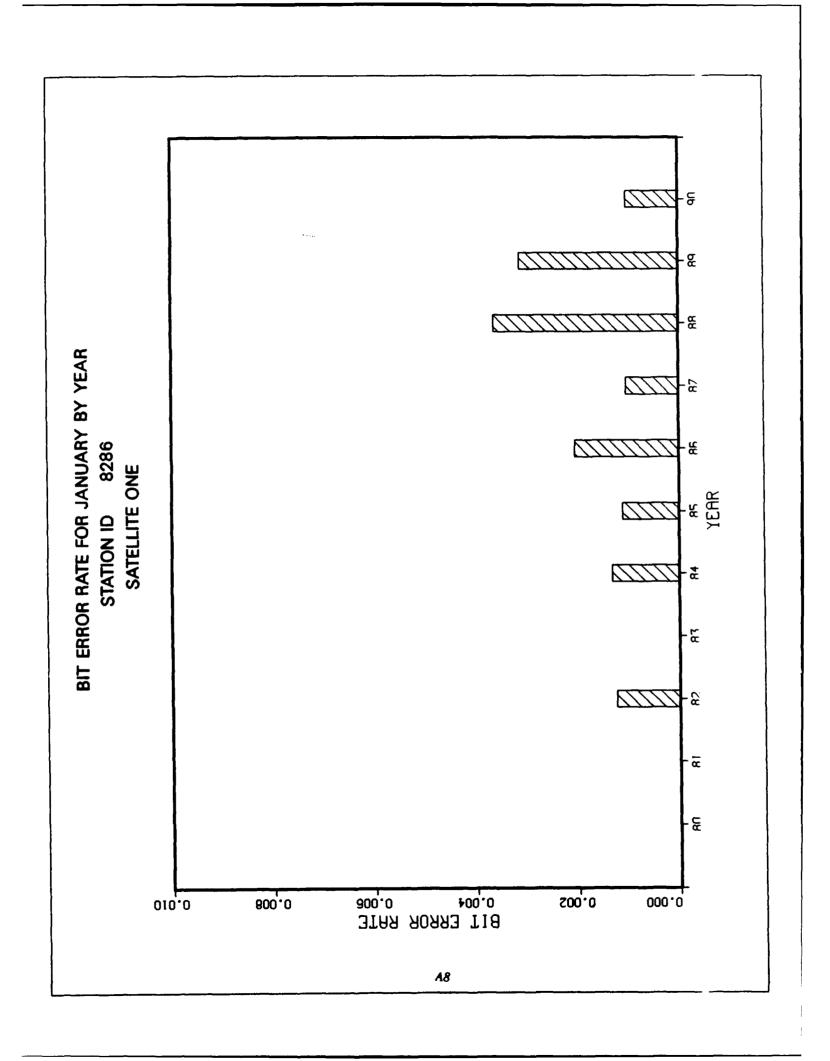


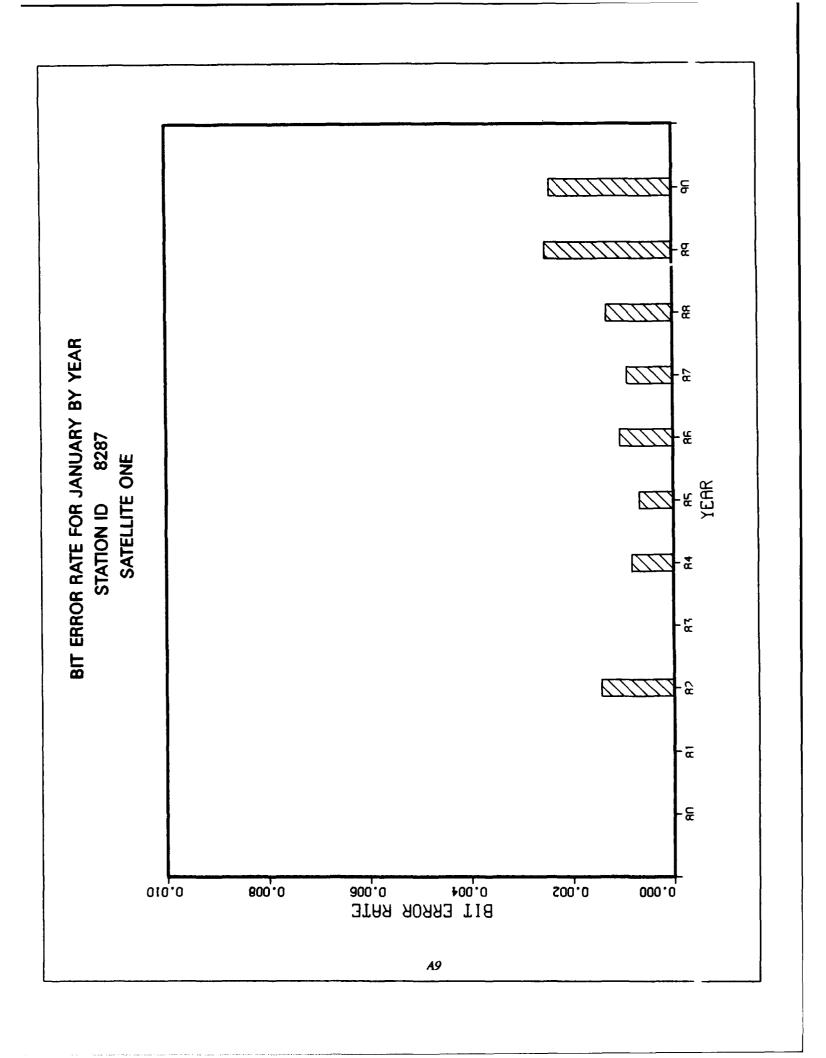


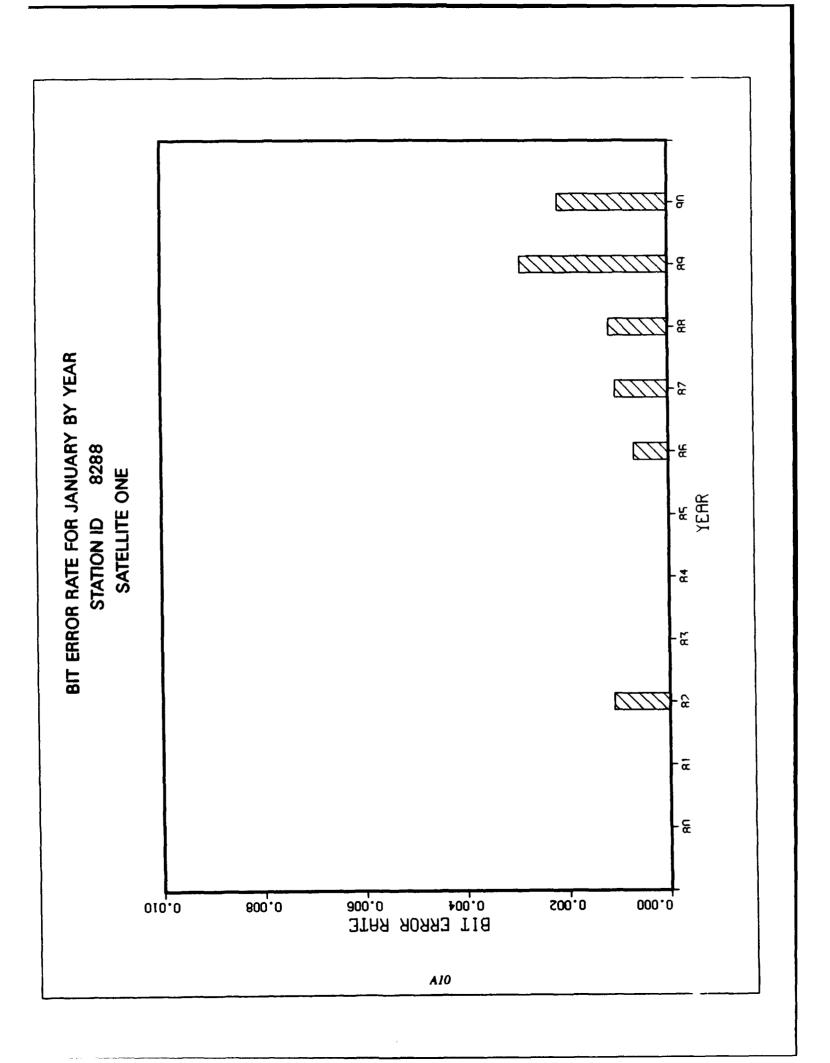
BIT ERROR RATE FOR JANUARY BY YEAR \$ - [[]] SATELLITE ONE STATION ID *ZZZZ* 2. 900.0 800,0 **100.**0 S00.0 010.0 000.0 BIT ERROR RATE

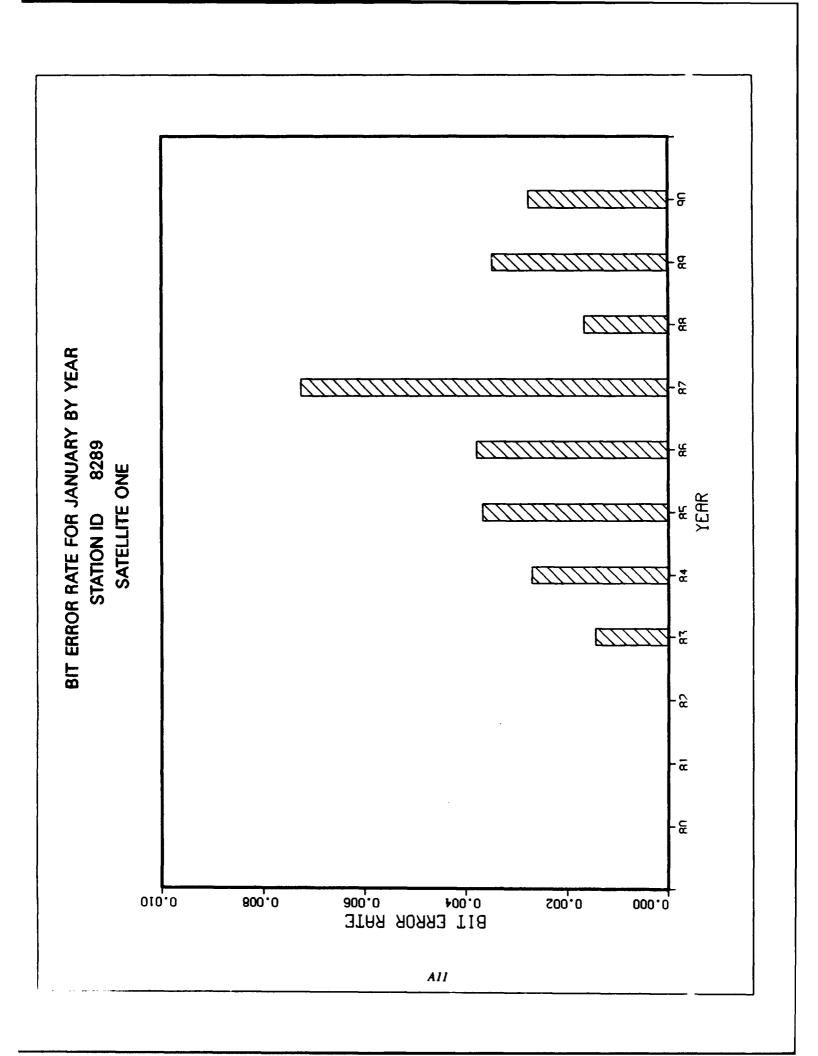




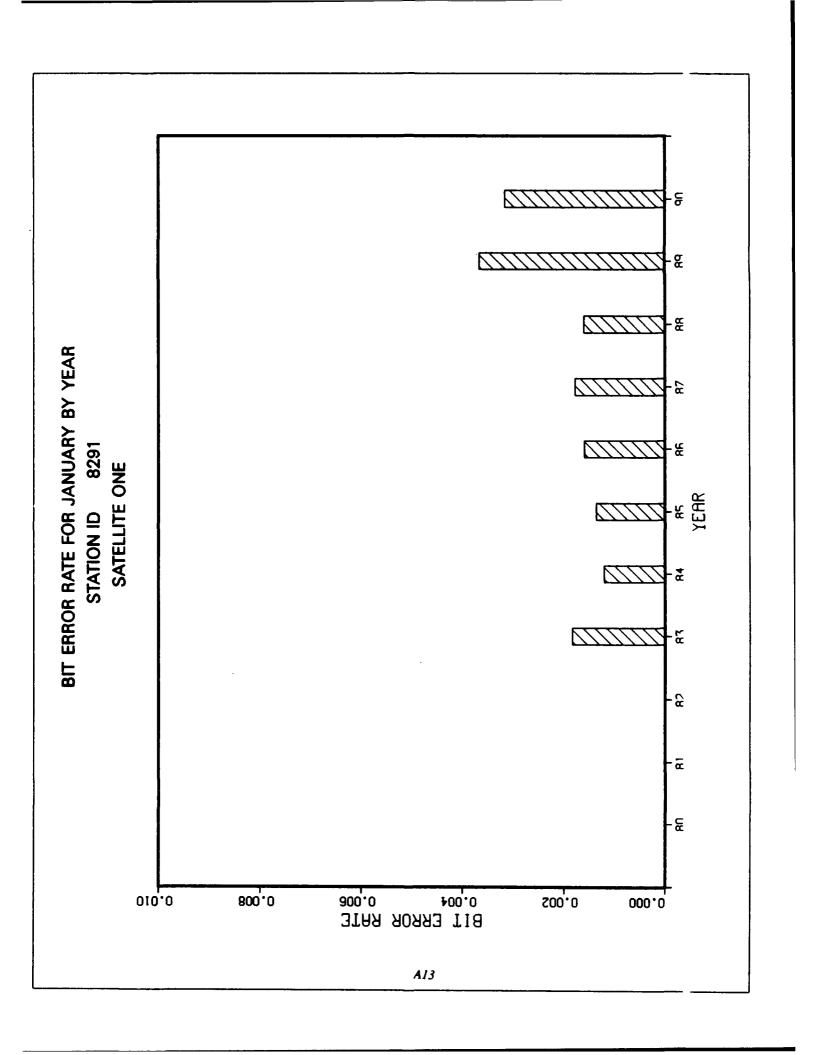


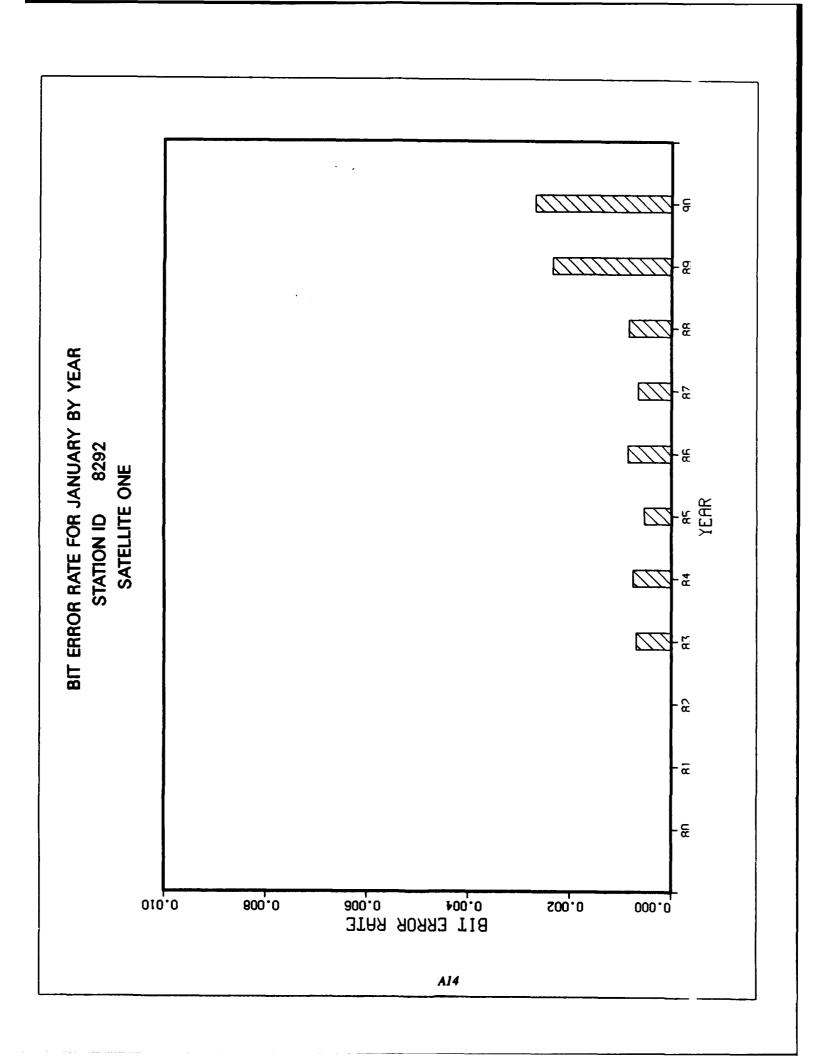


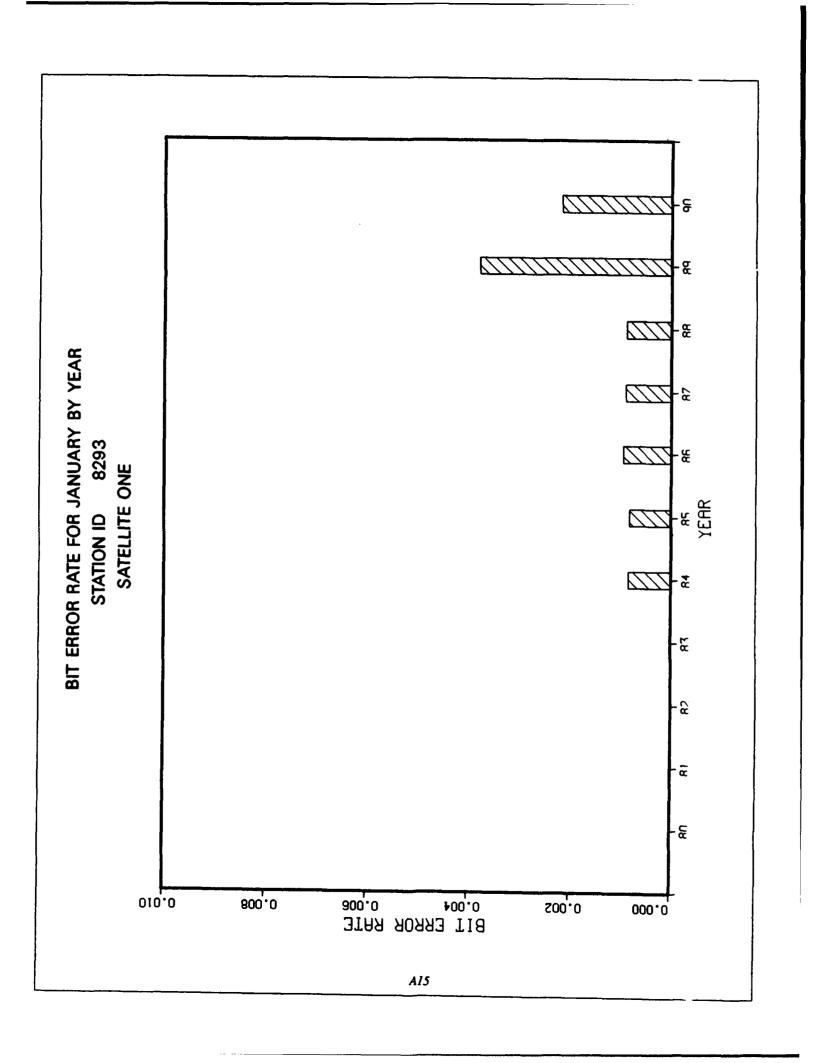


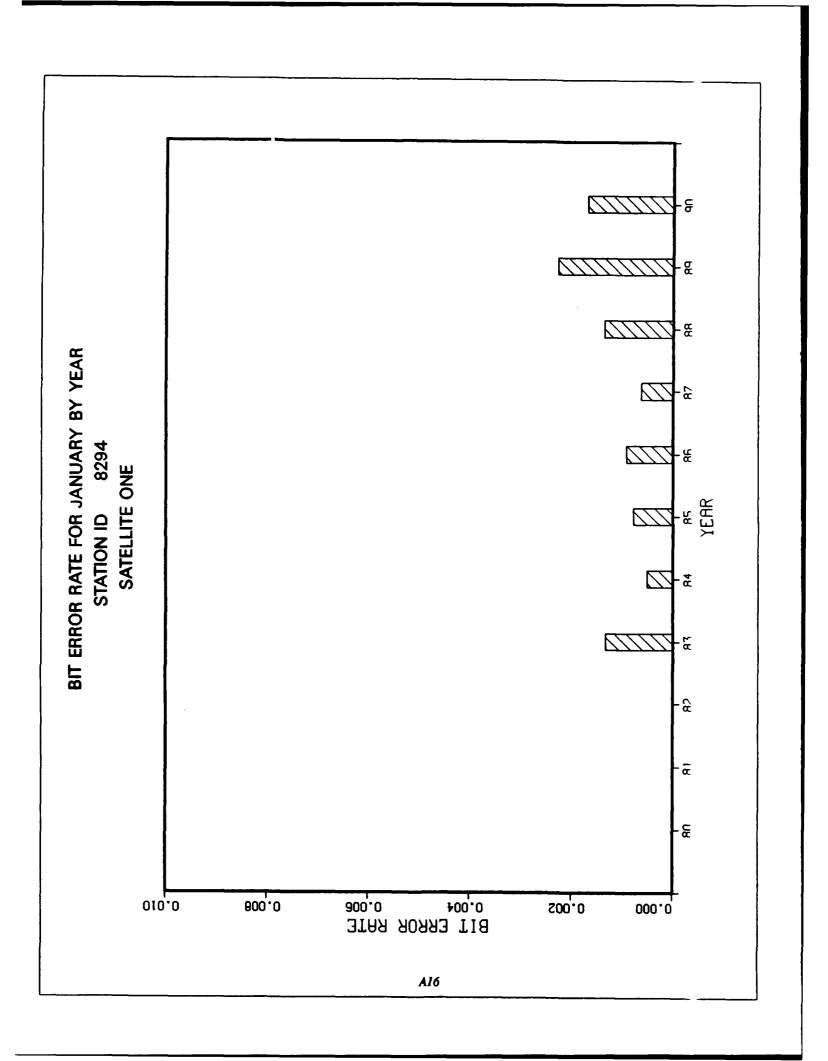


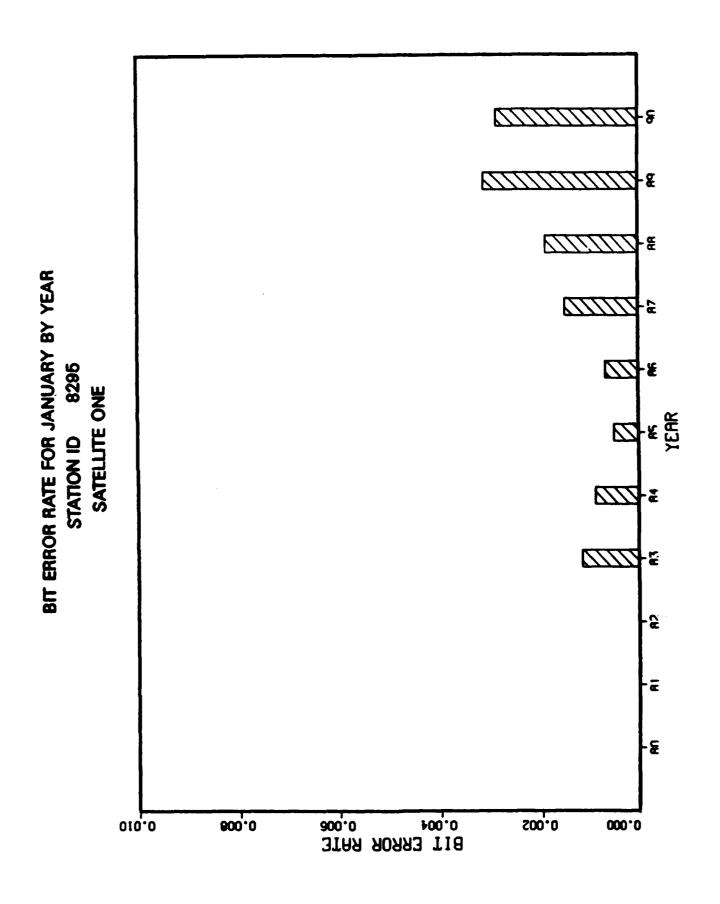
BIT ERROR RATE FOR JANUARY BY YEAR 8290 SATELLITE ONE STATION ID ZZZZ-5 - 6. - Œ - 2 BIT ERROR RATE 0.006 600.0 S00.0 010,0 000.0

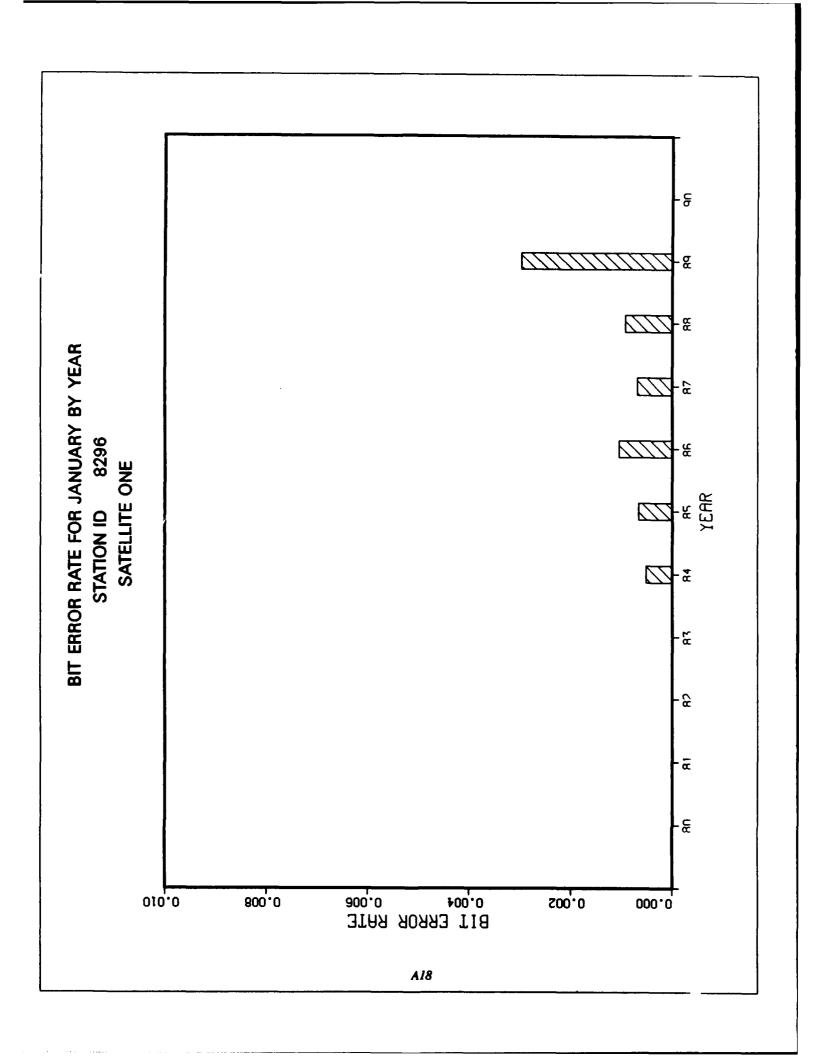


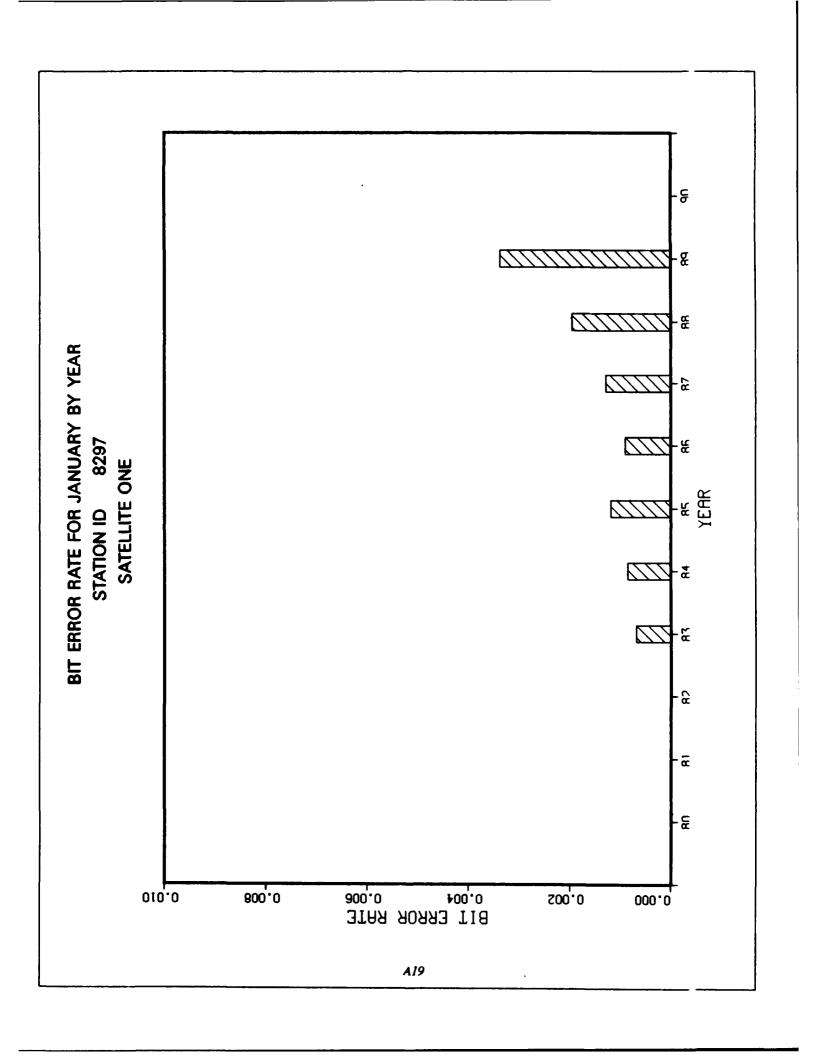


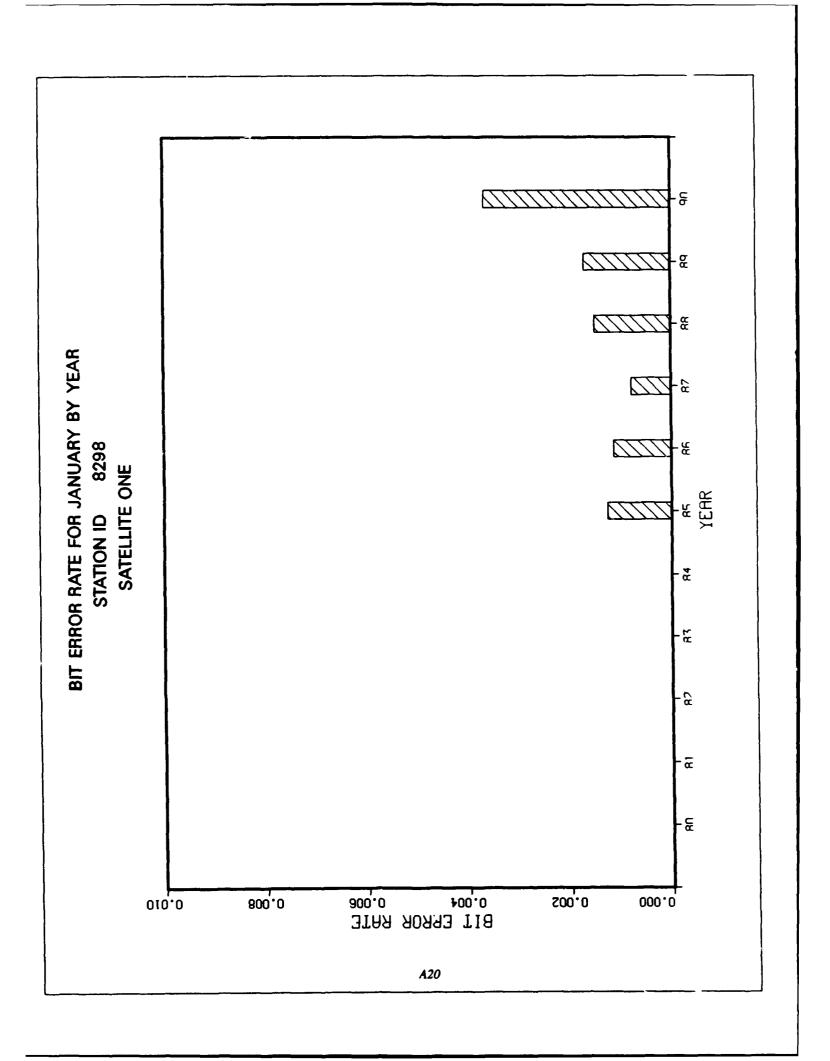


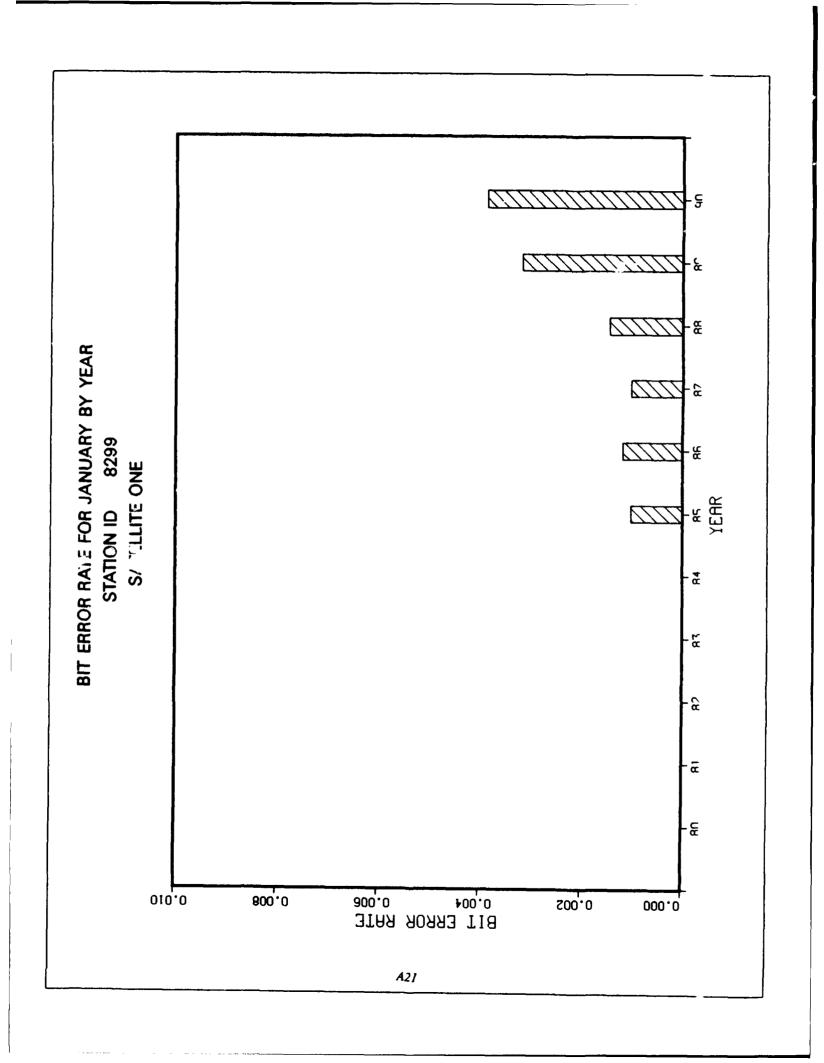


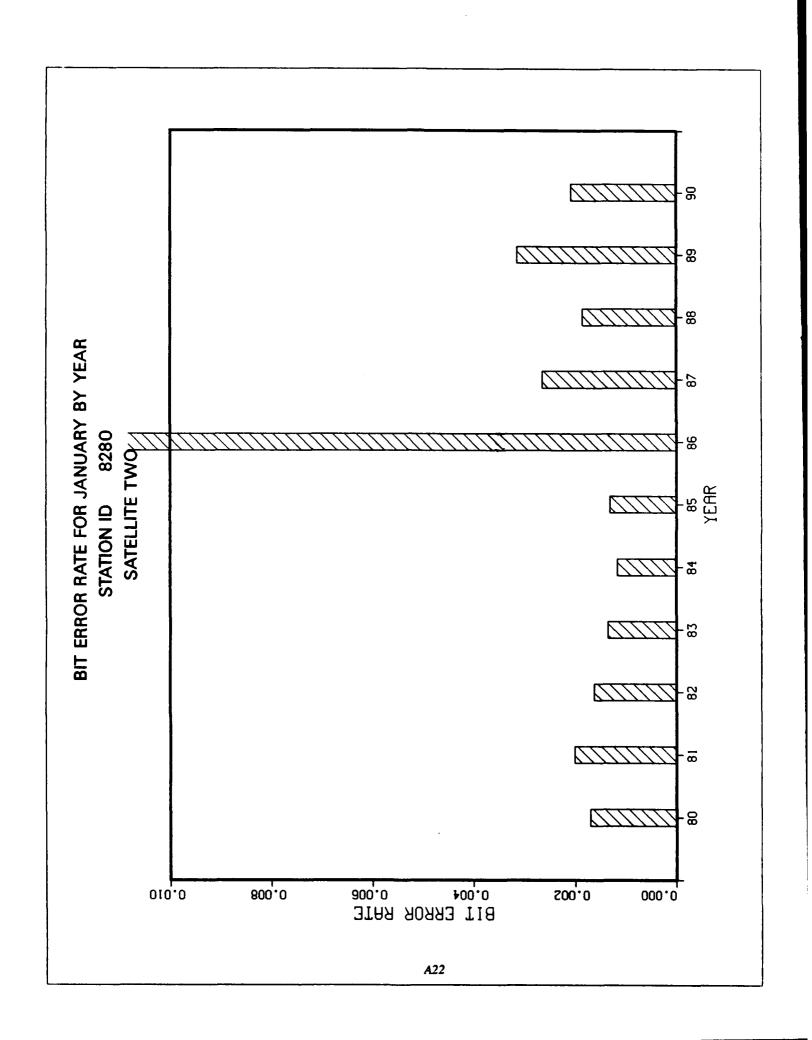


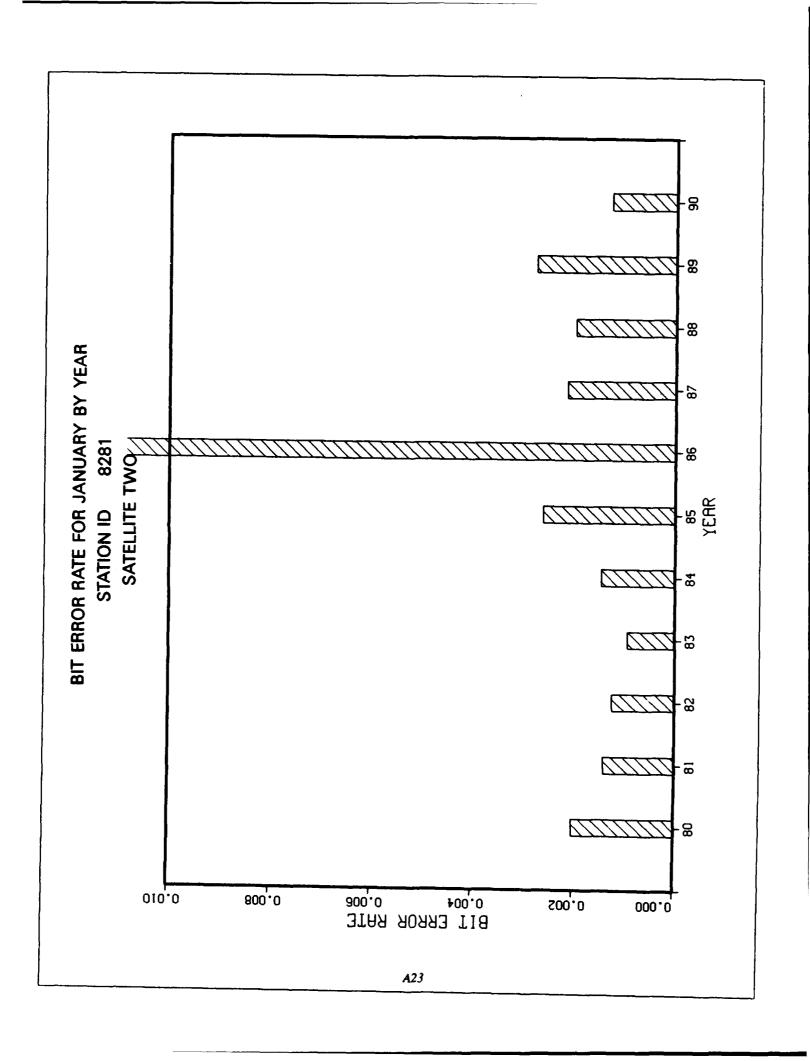


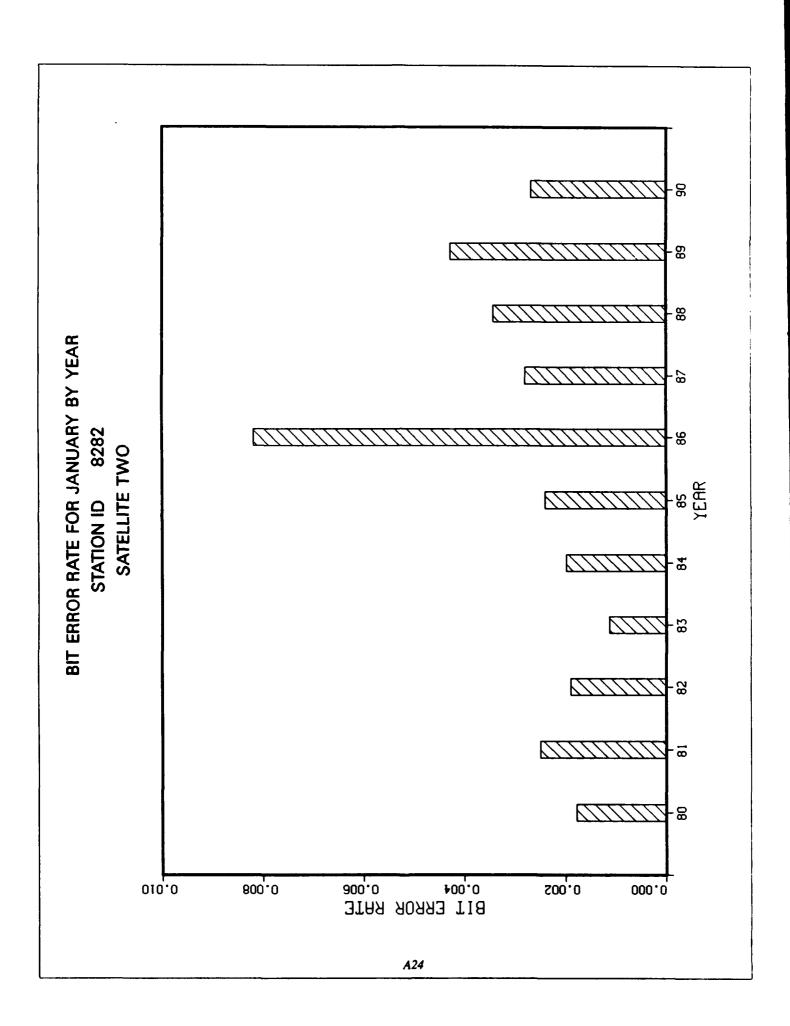


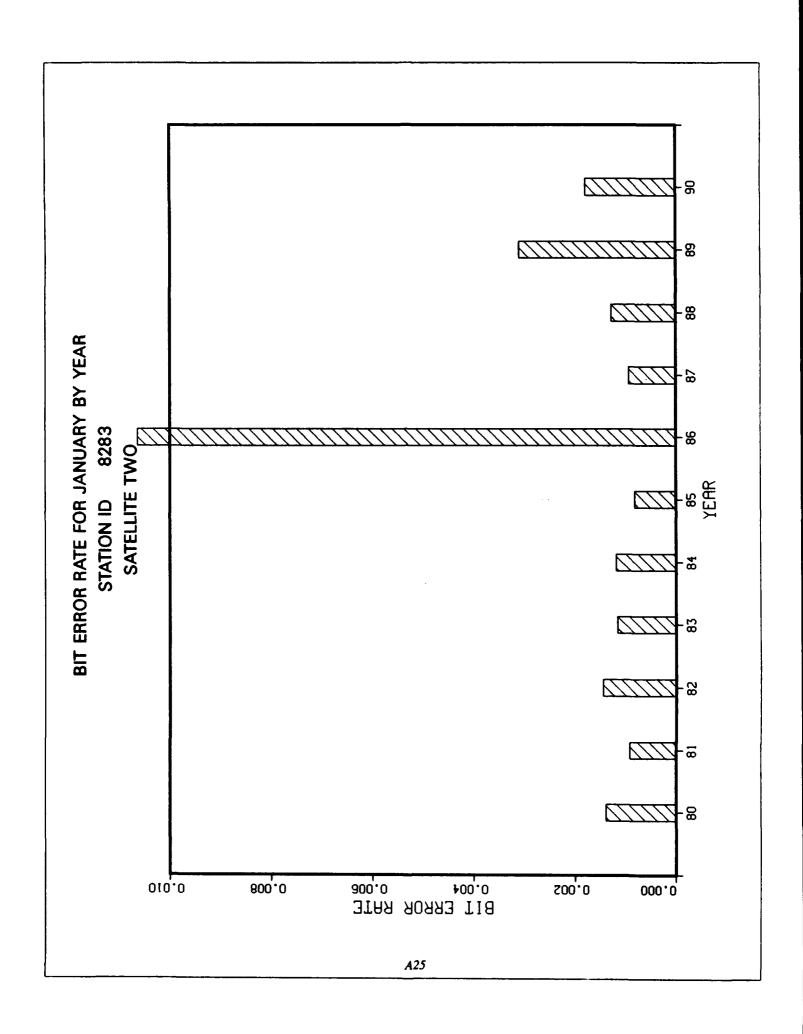


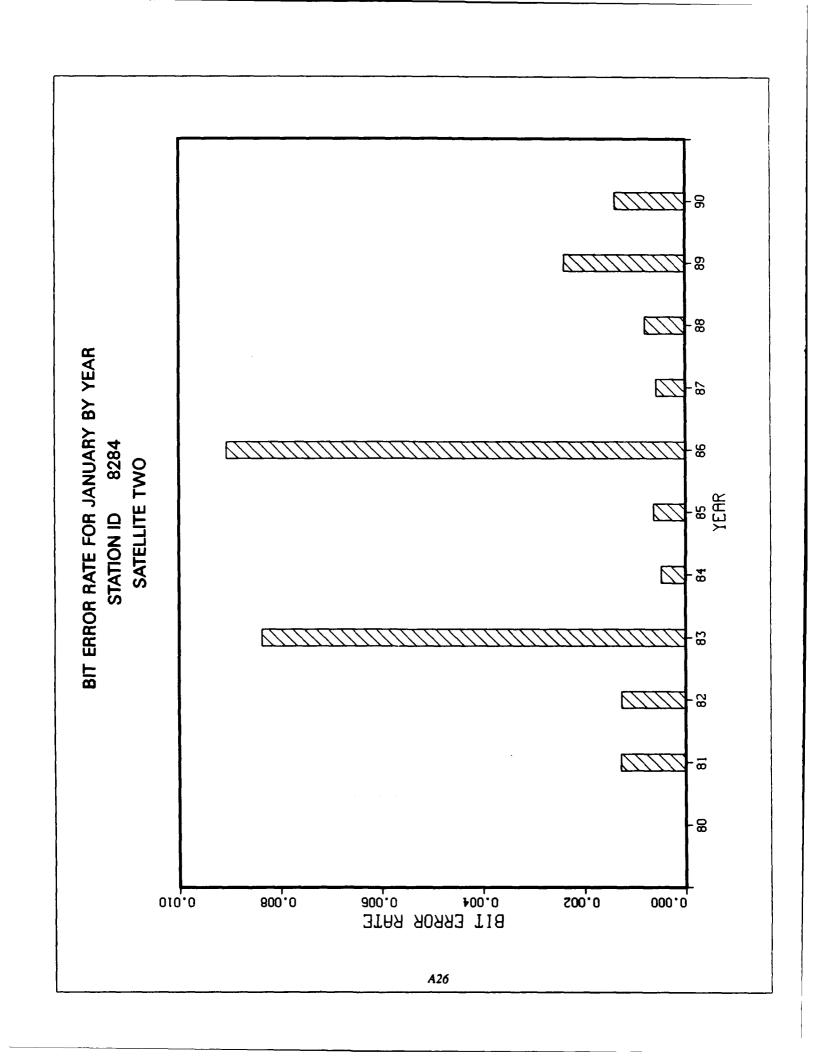


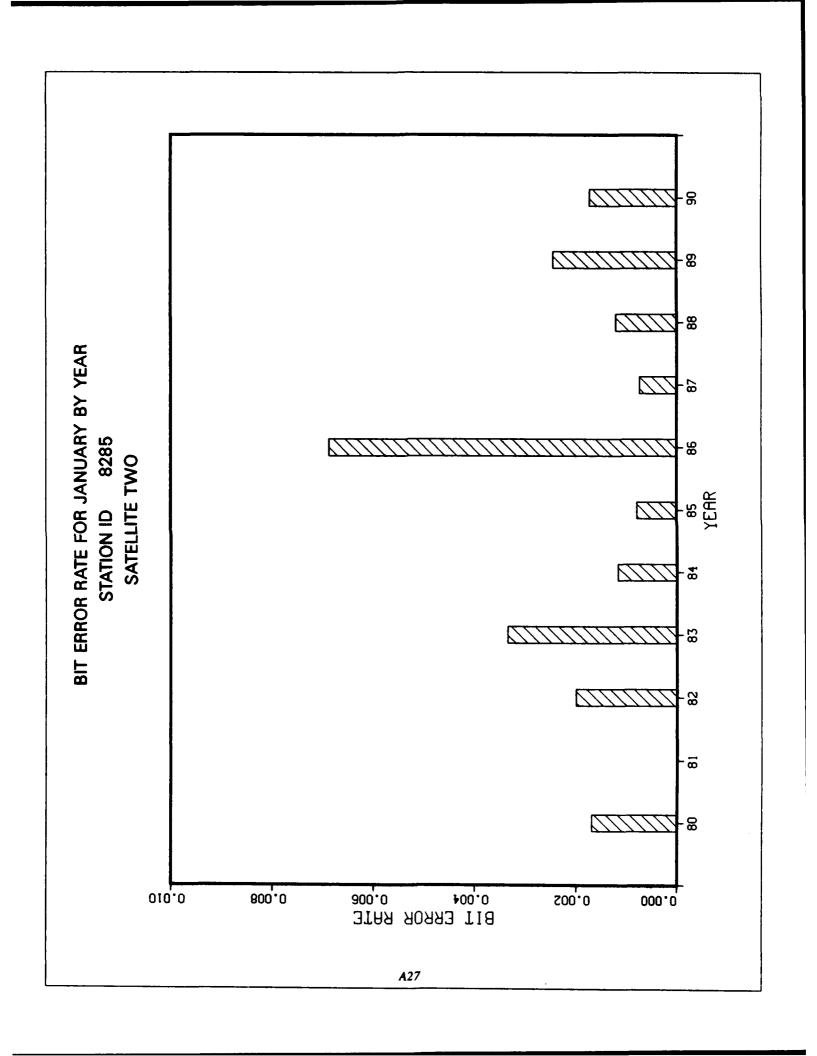


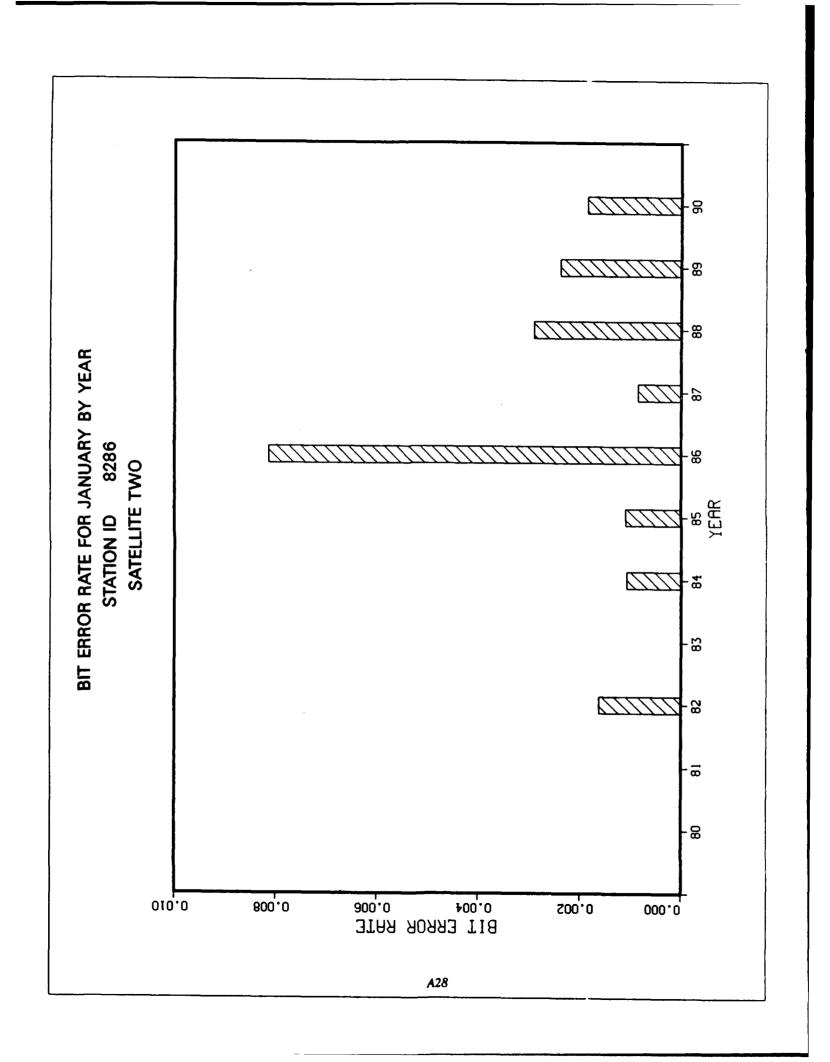


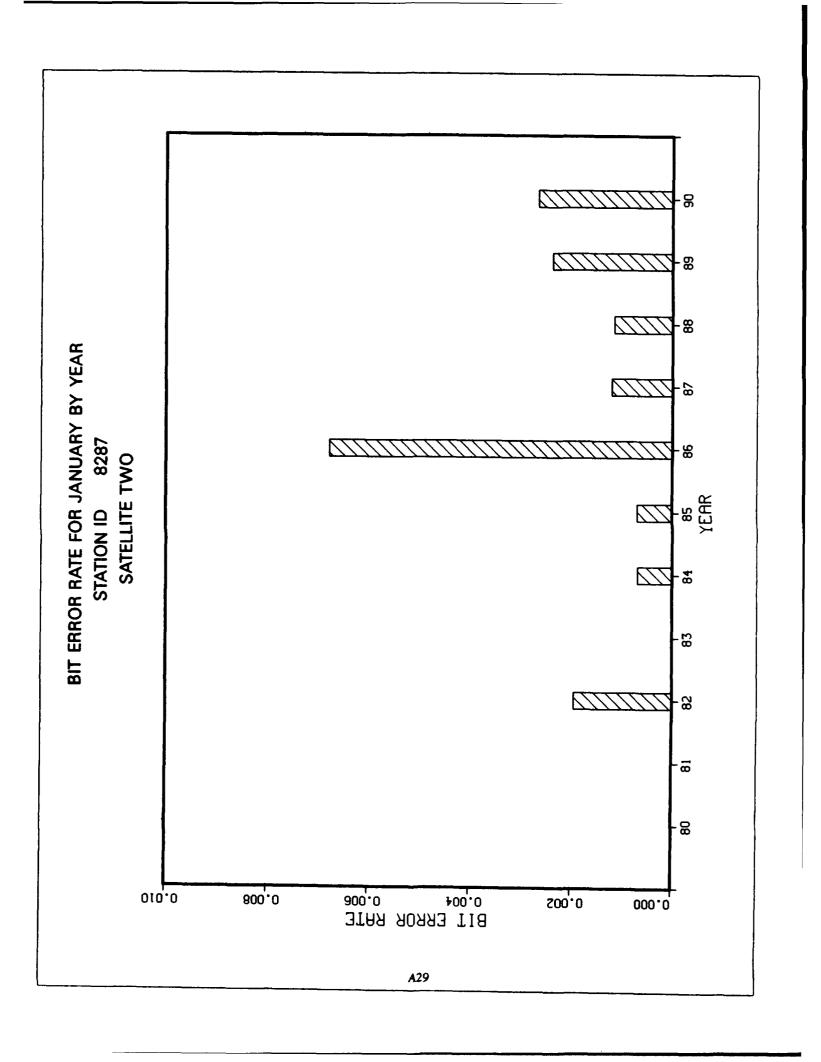


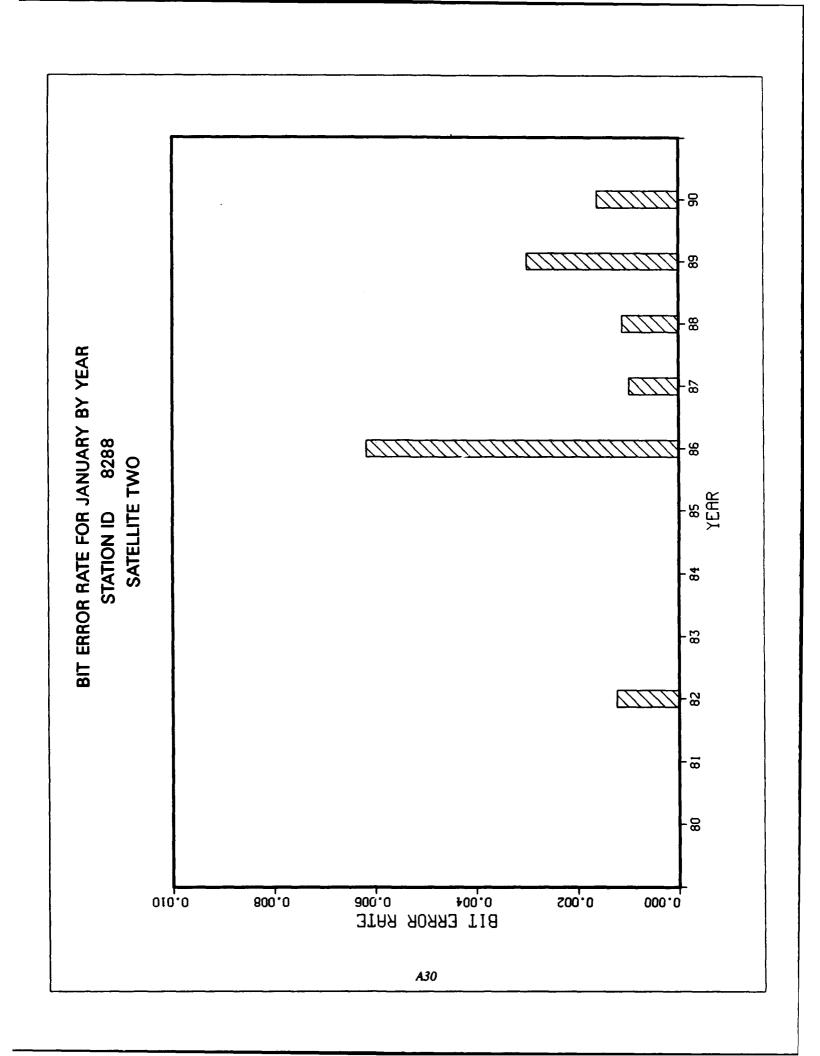


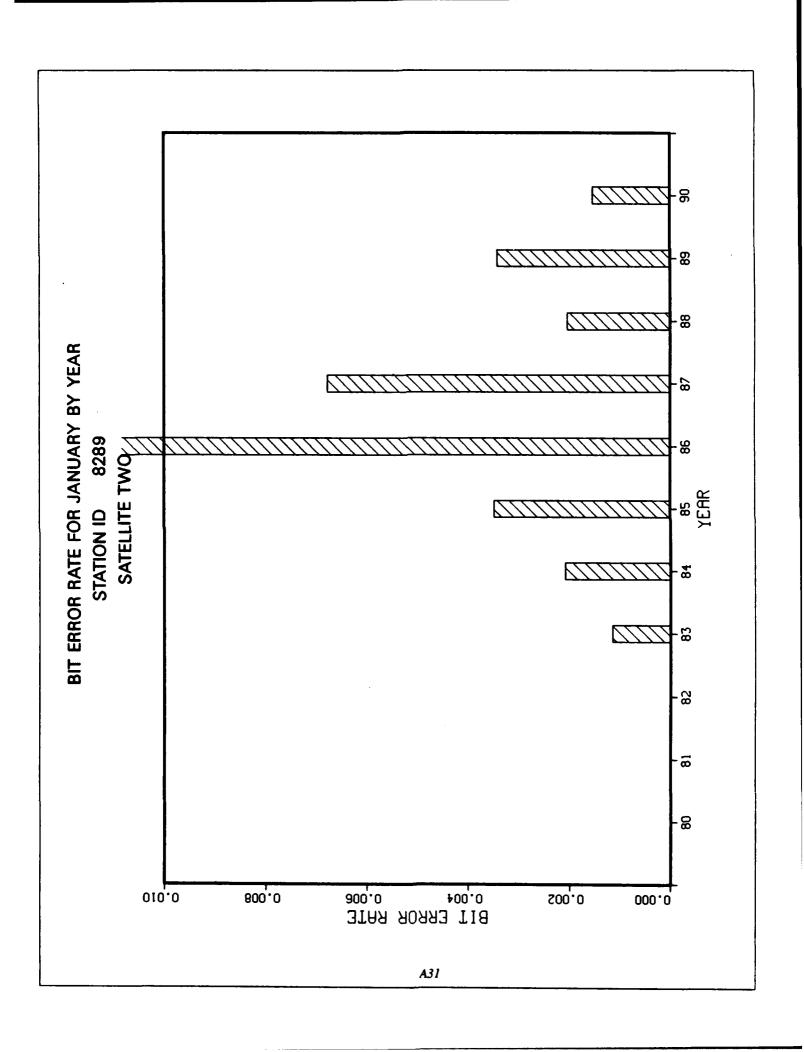


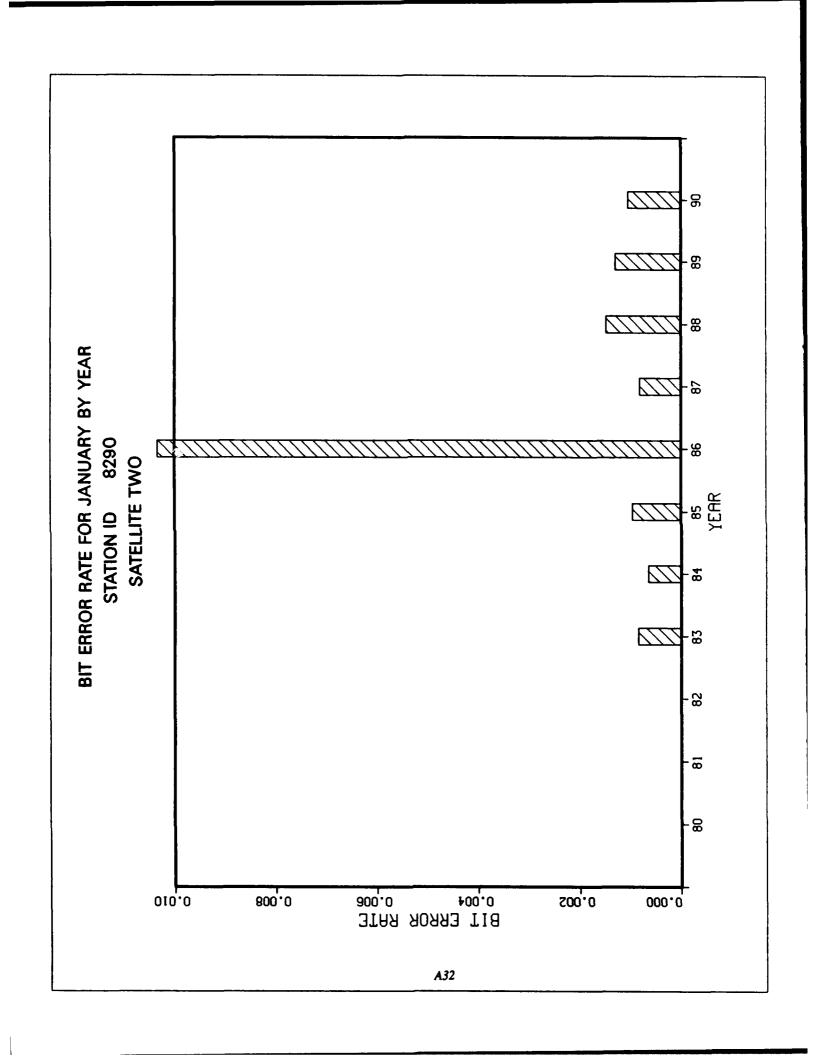


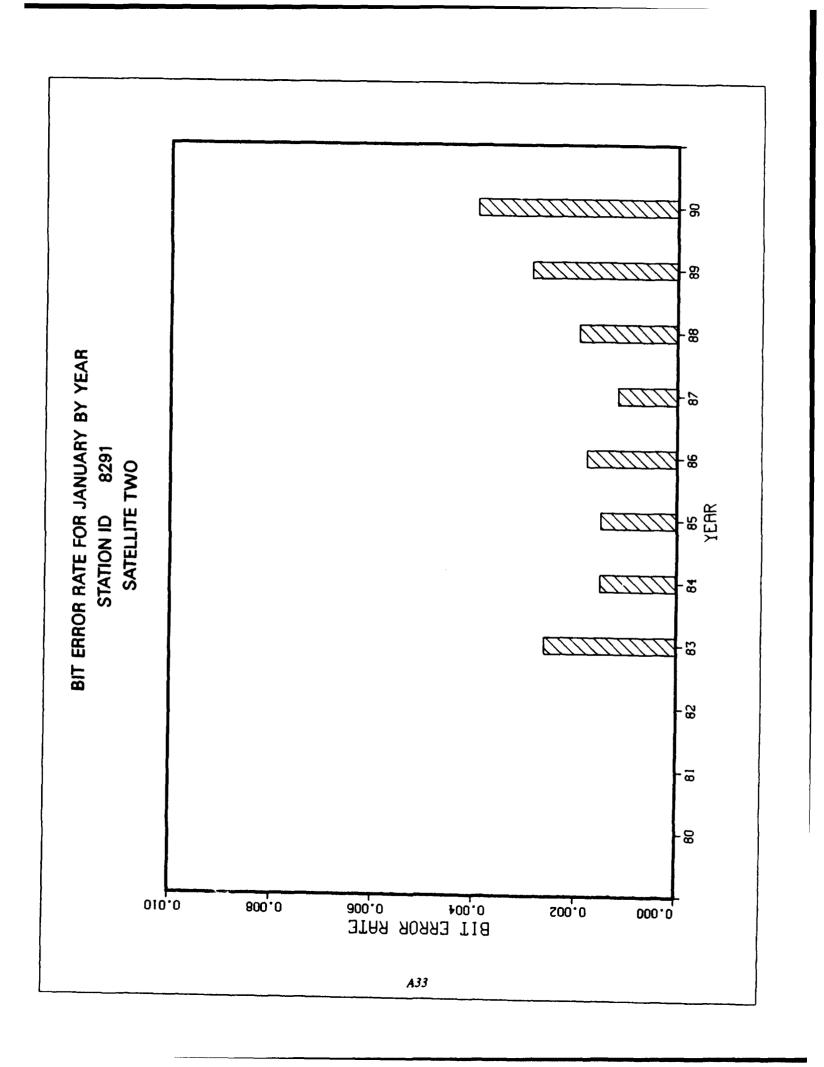


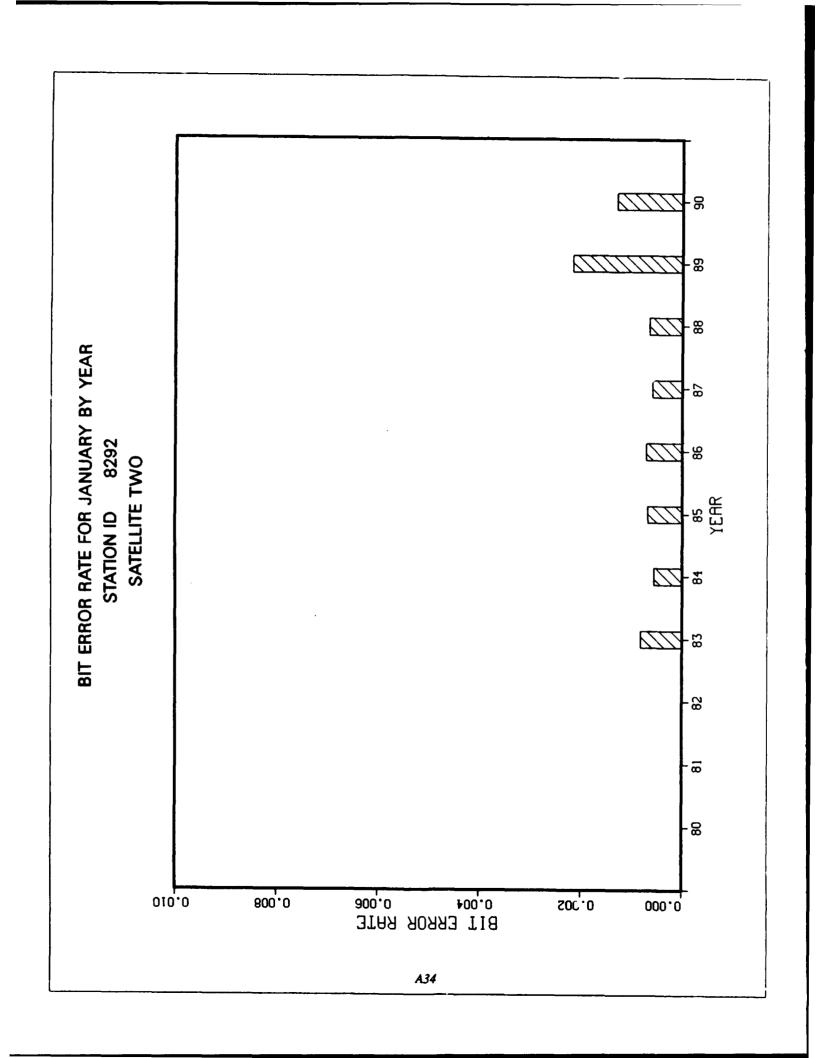


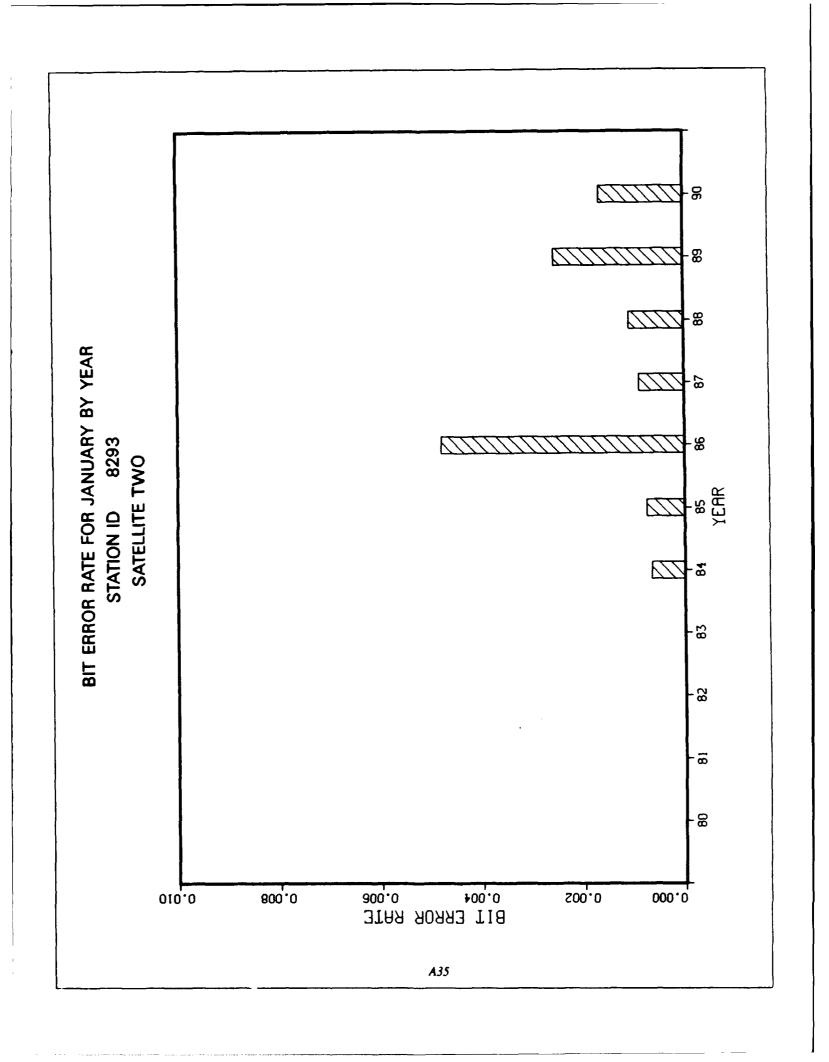


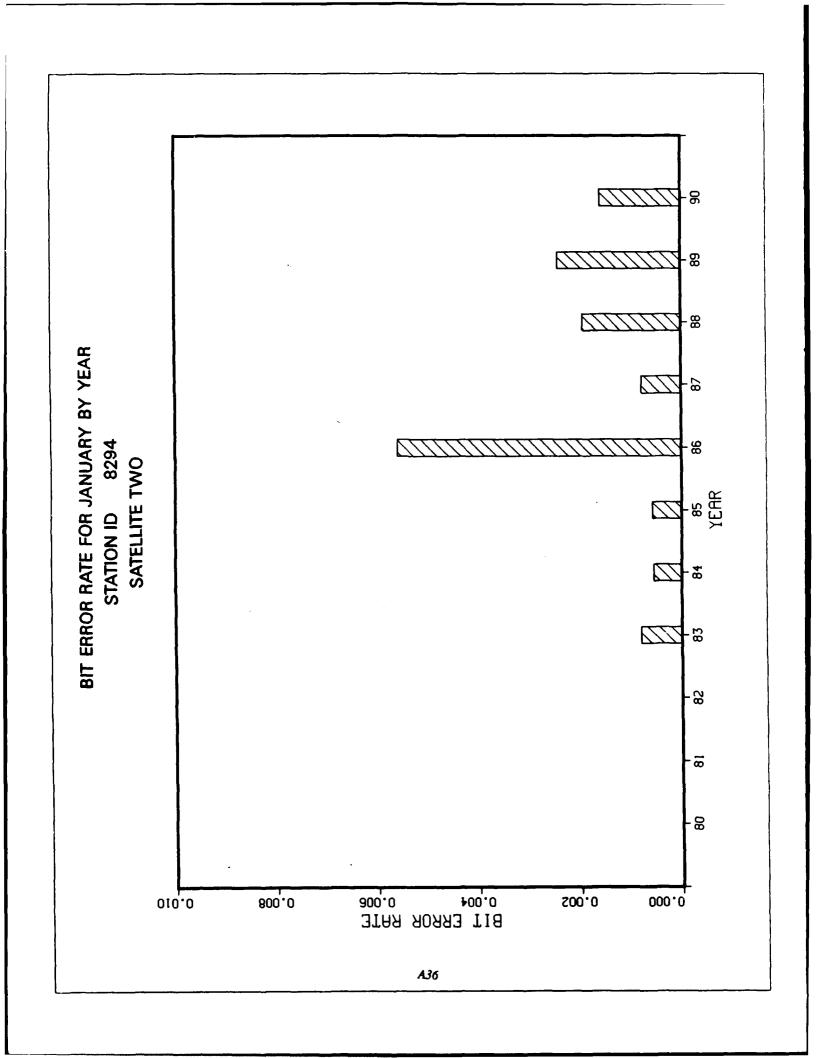


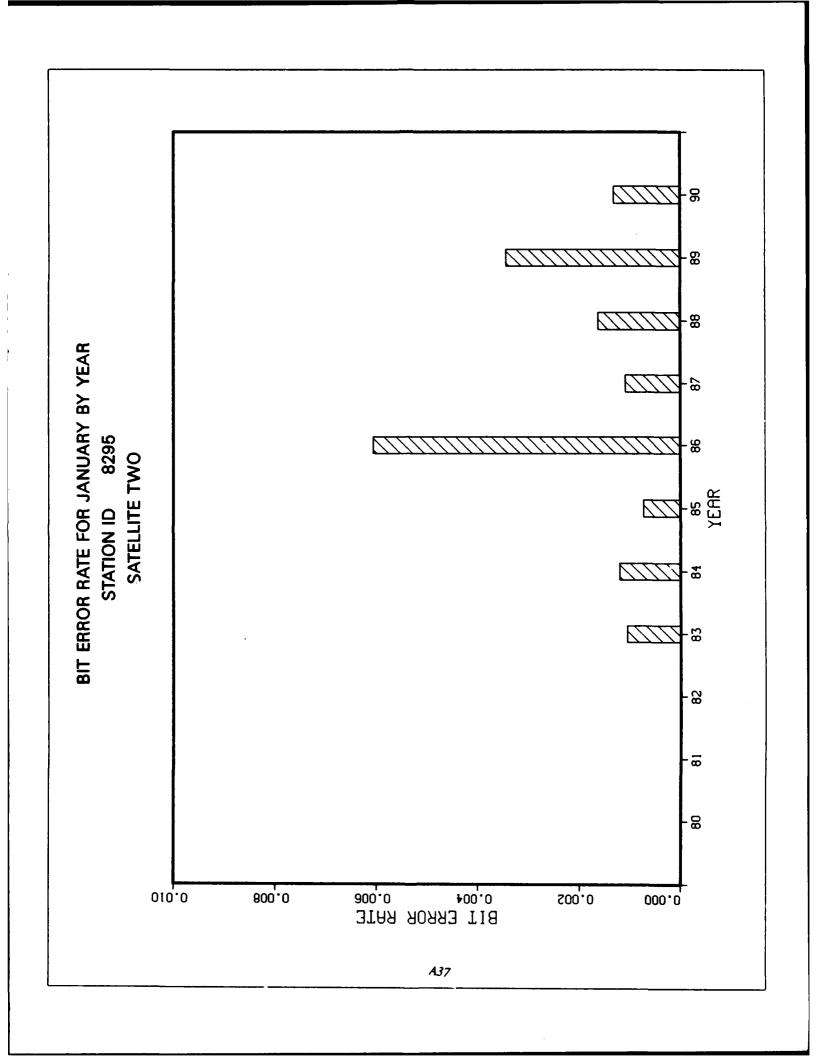


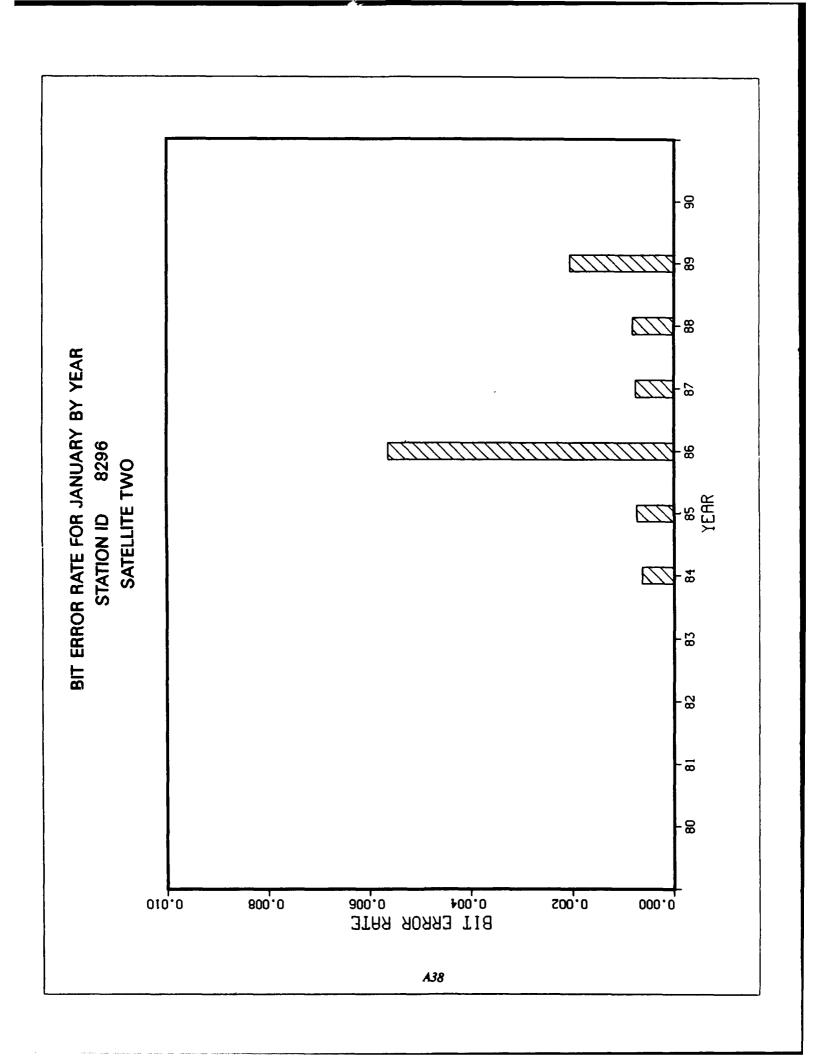


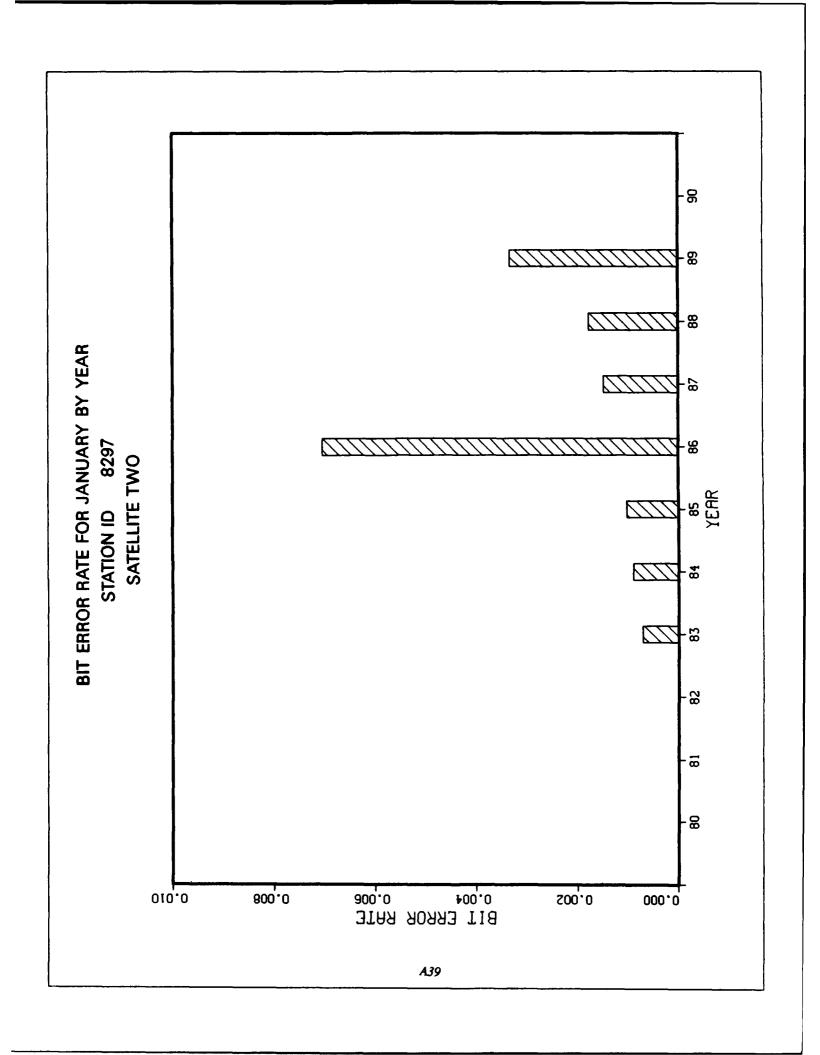


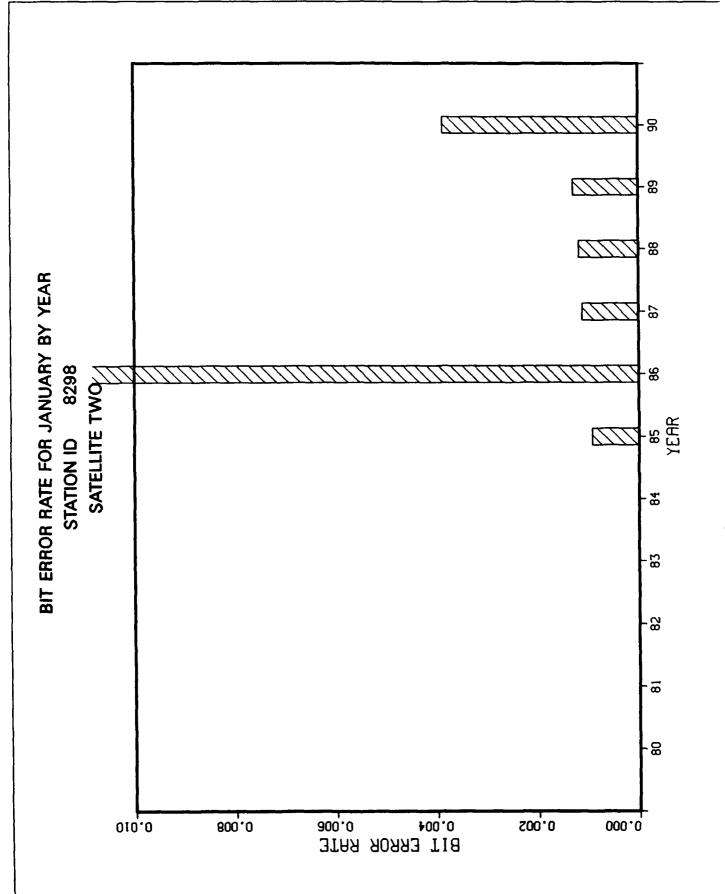


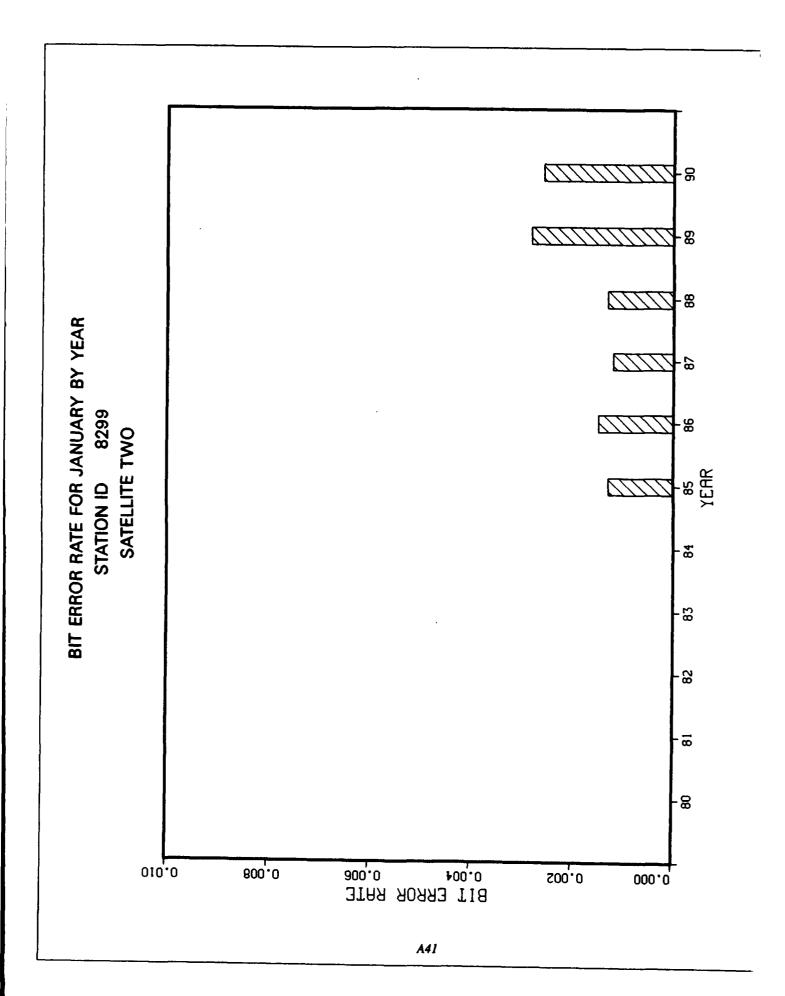


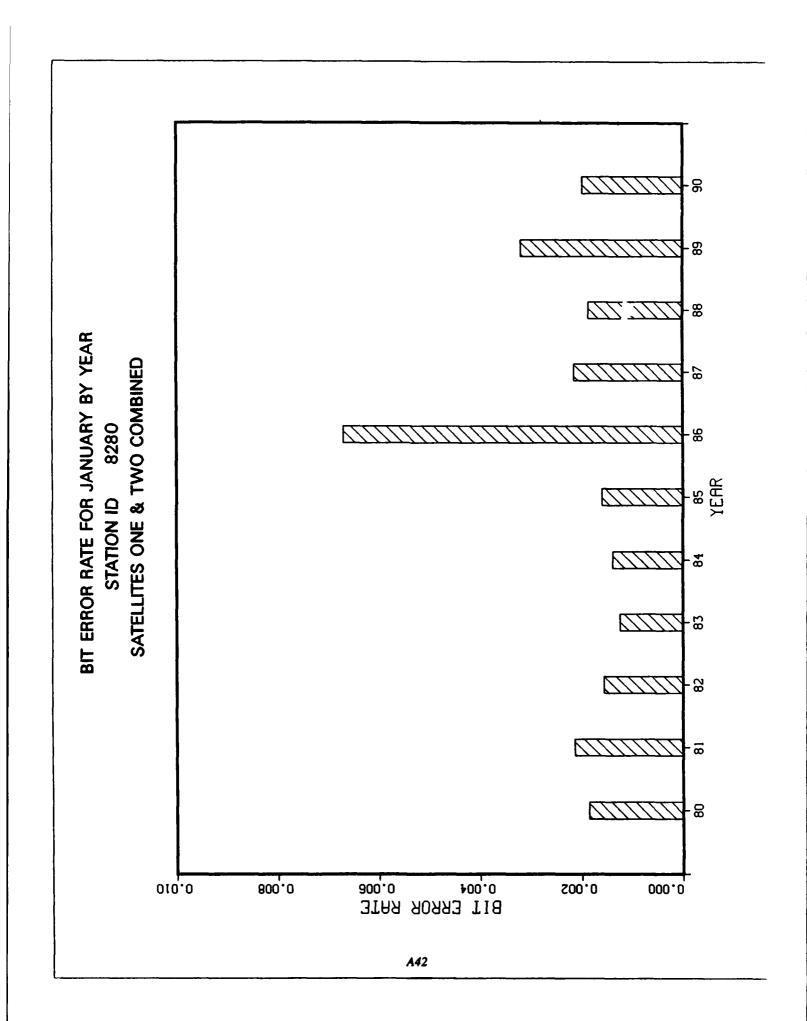


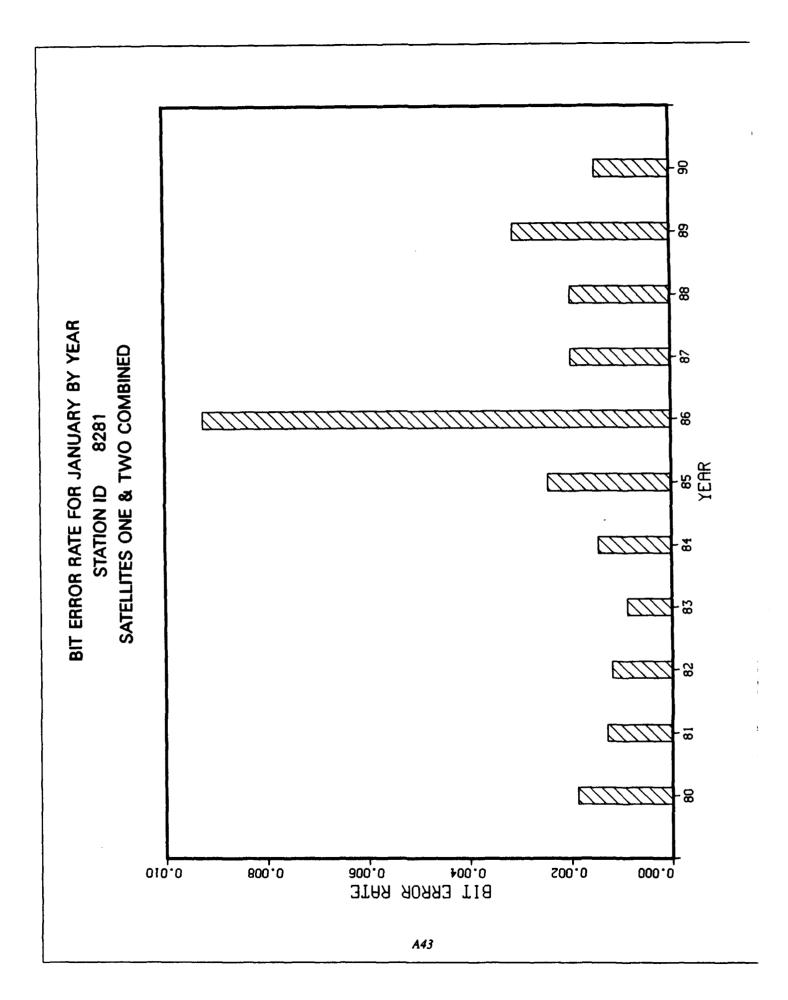


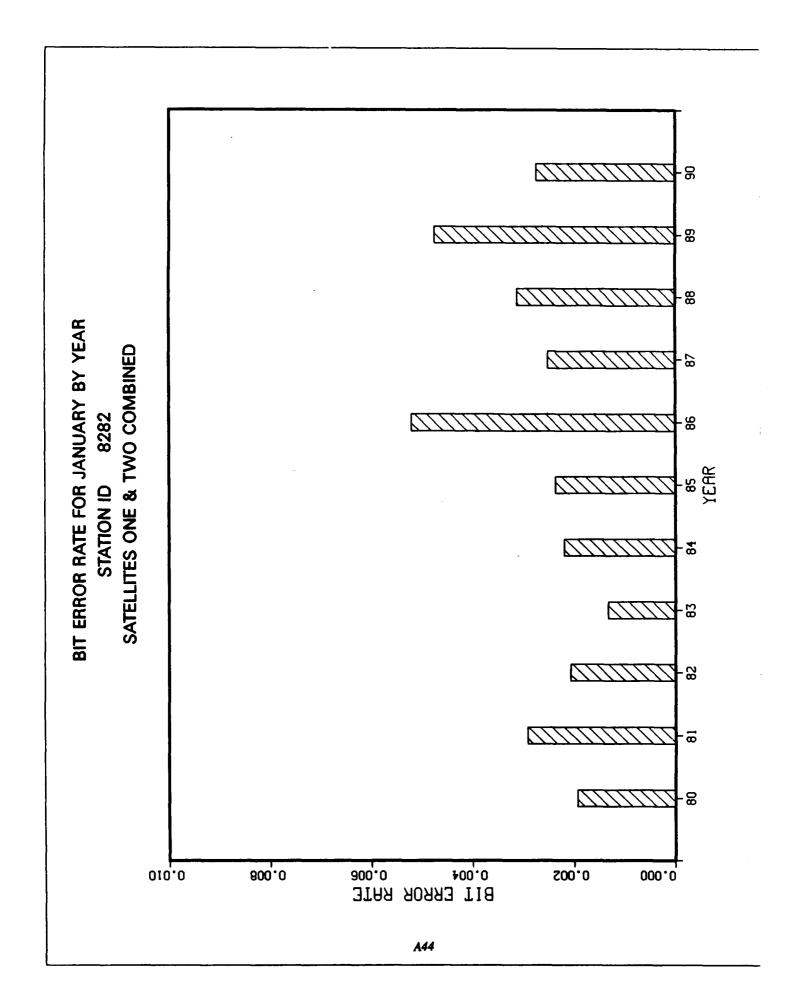


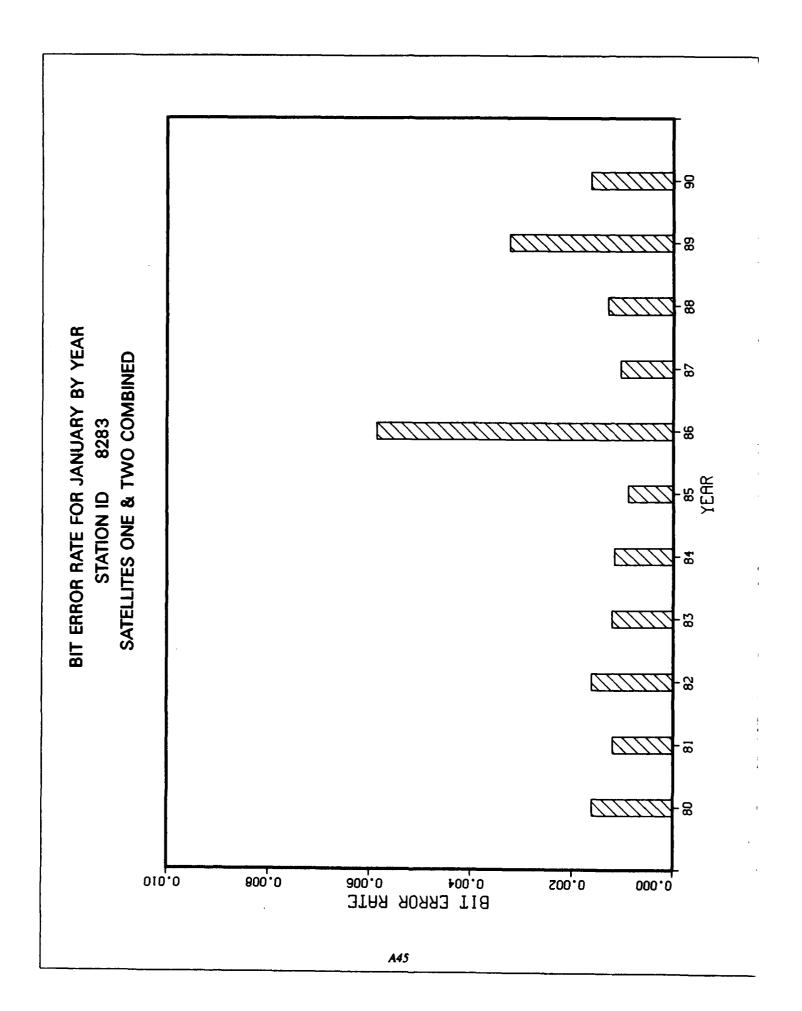


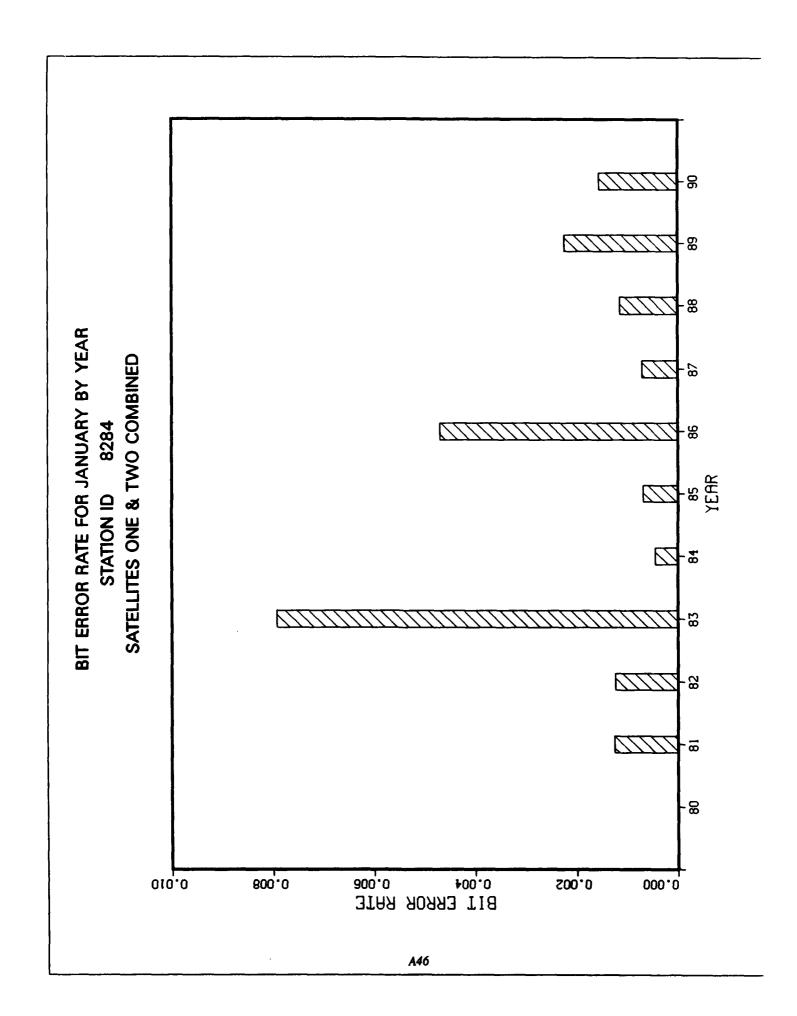


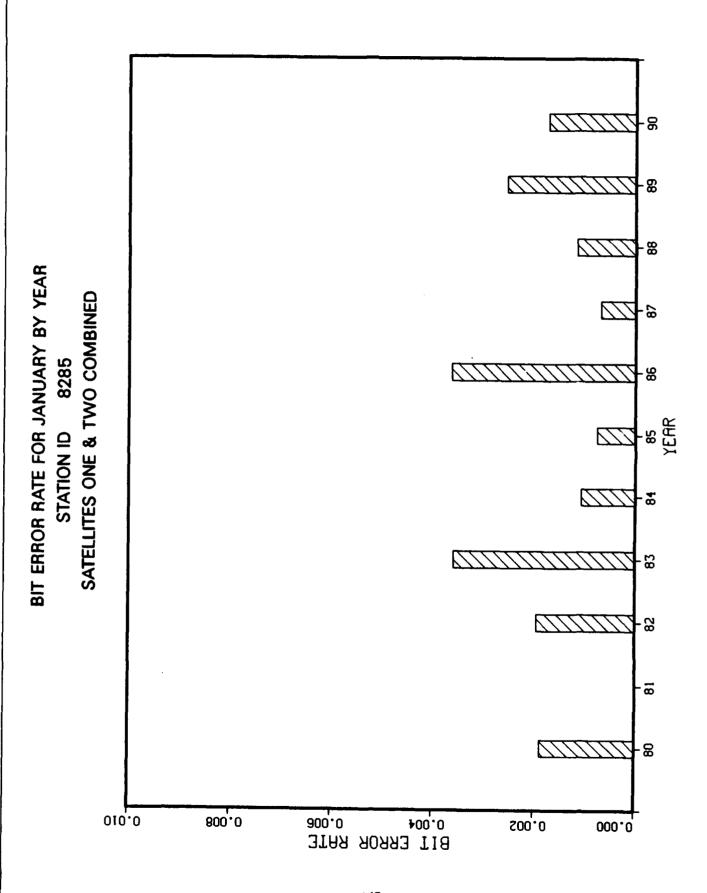


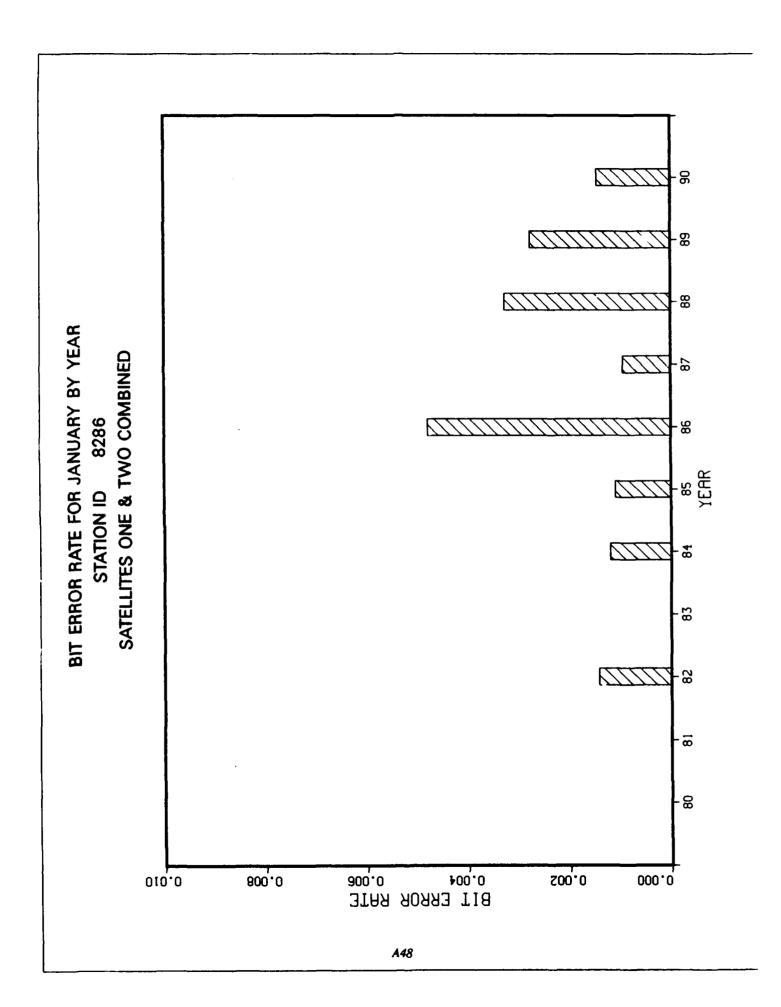


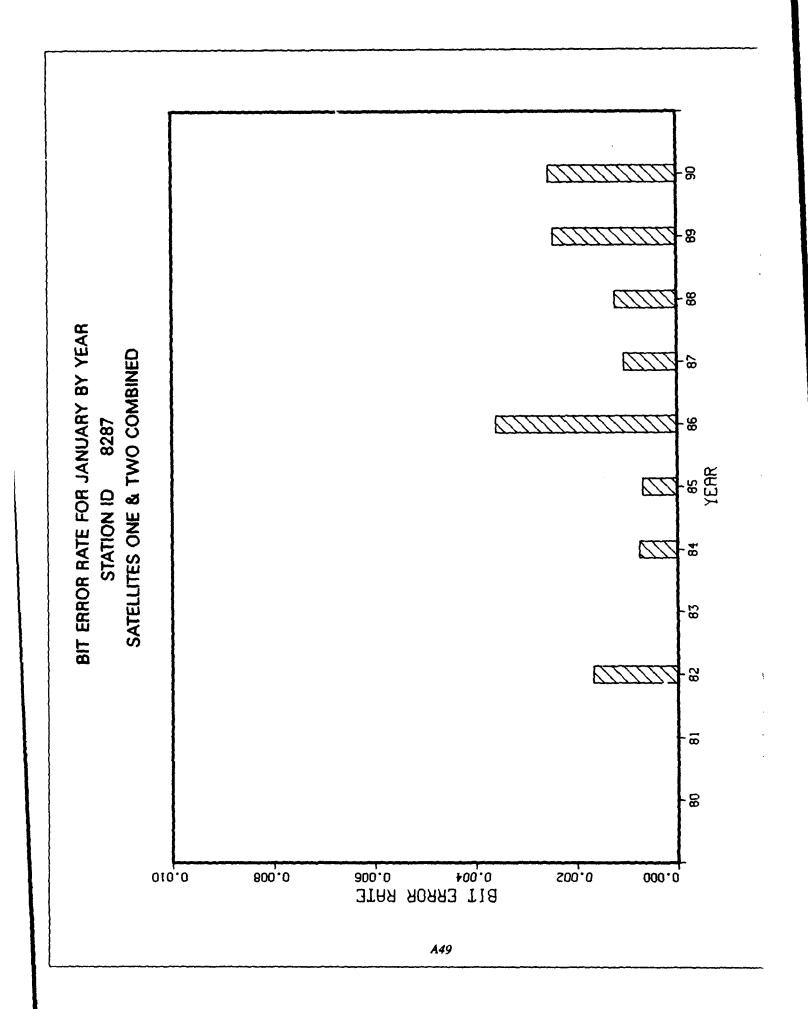


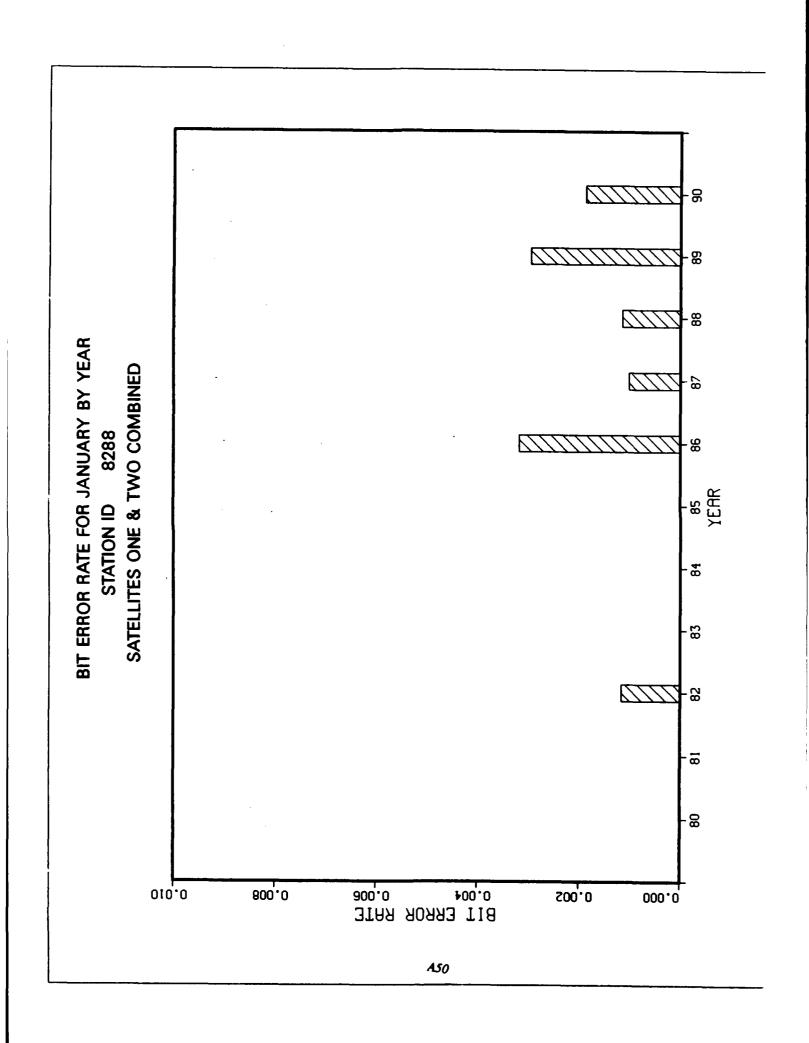


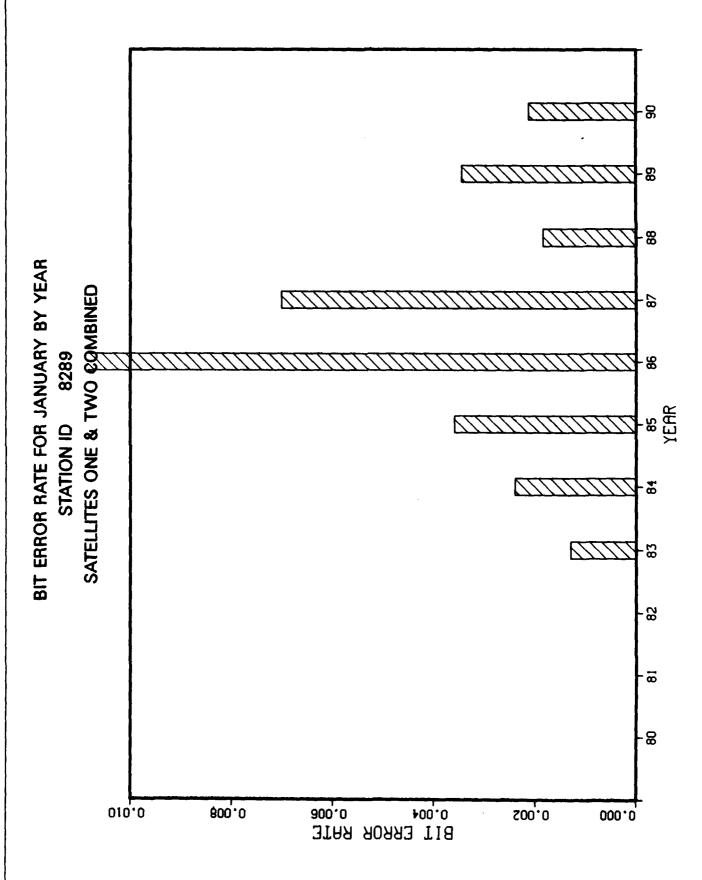


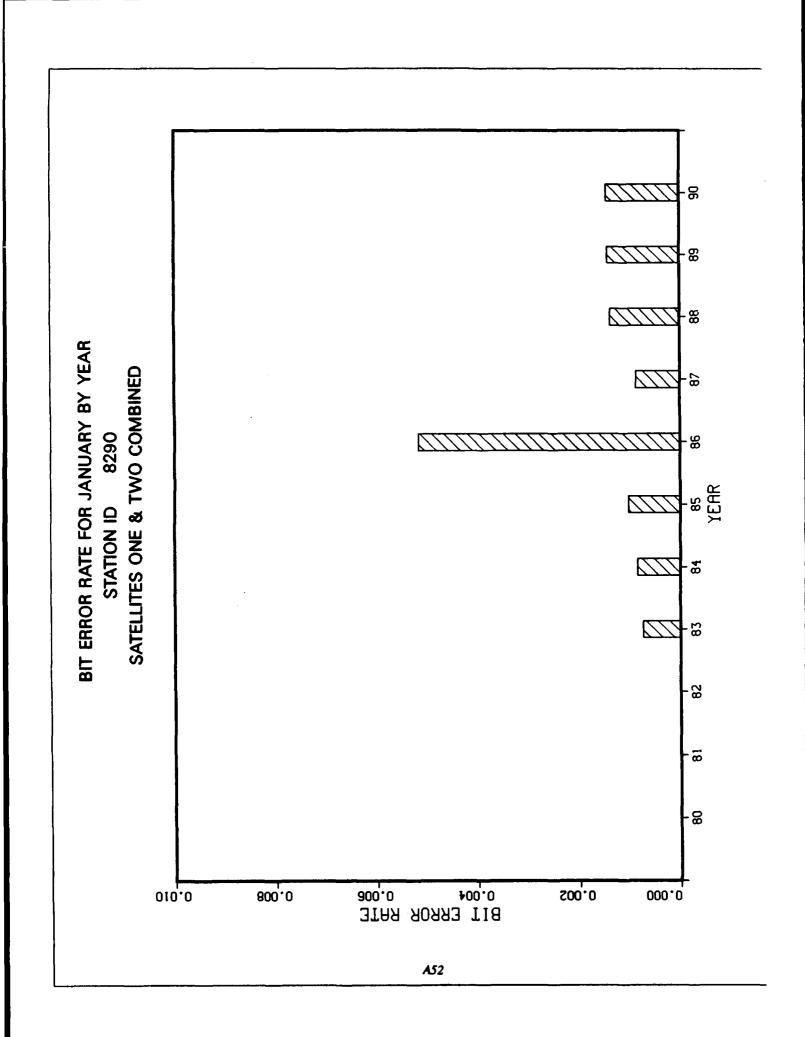


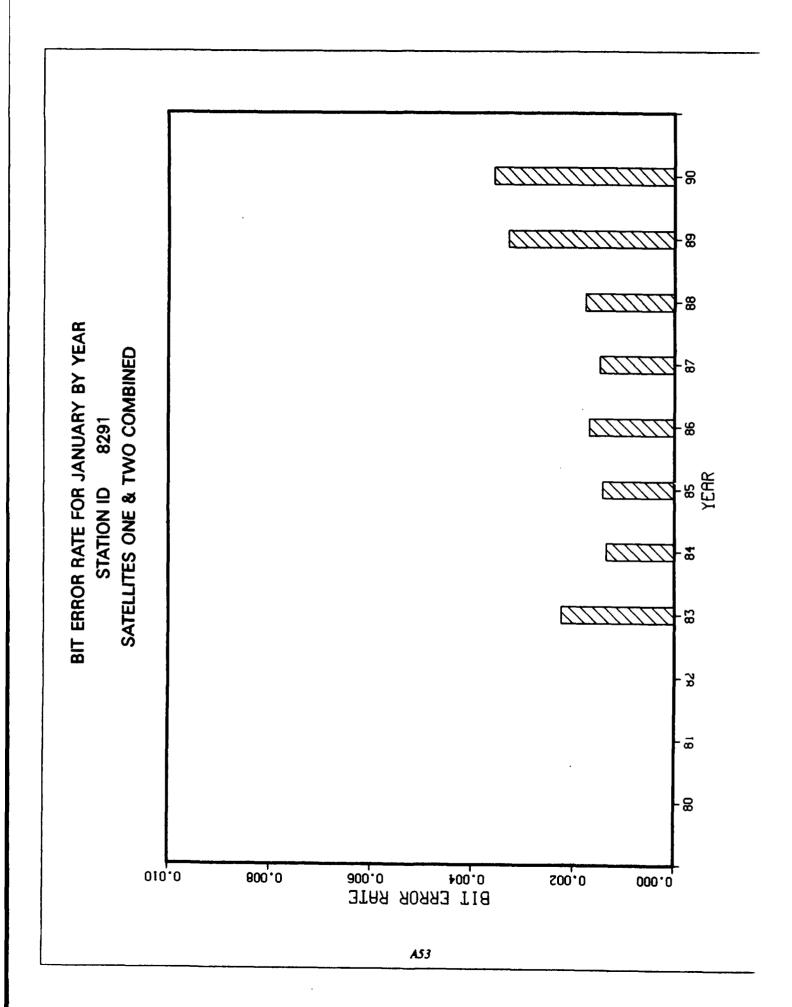


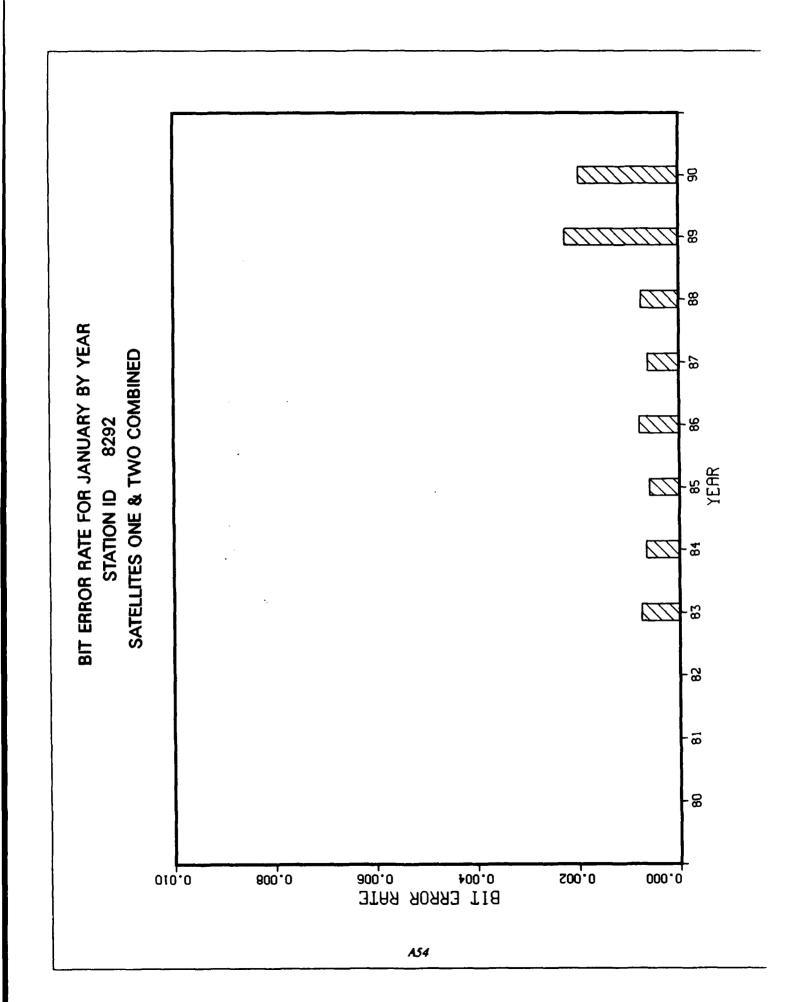


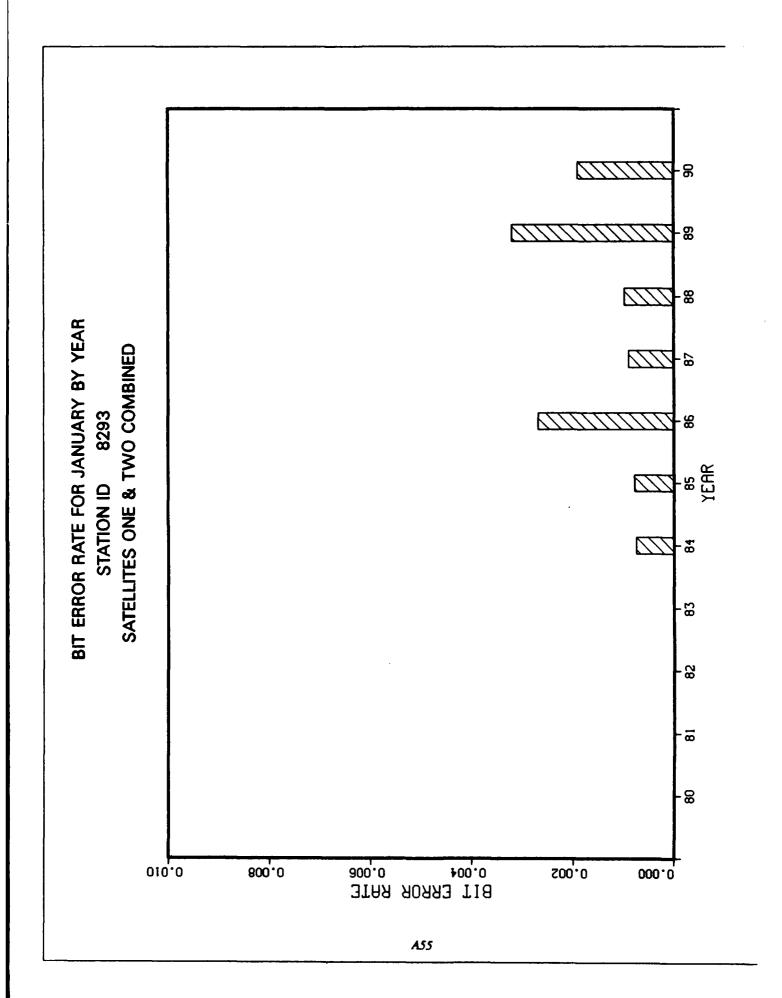


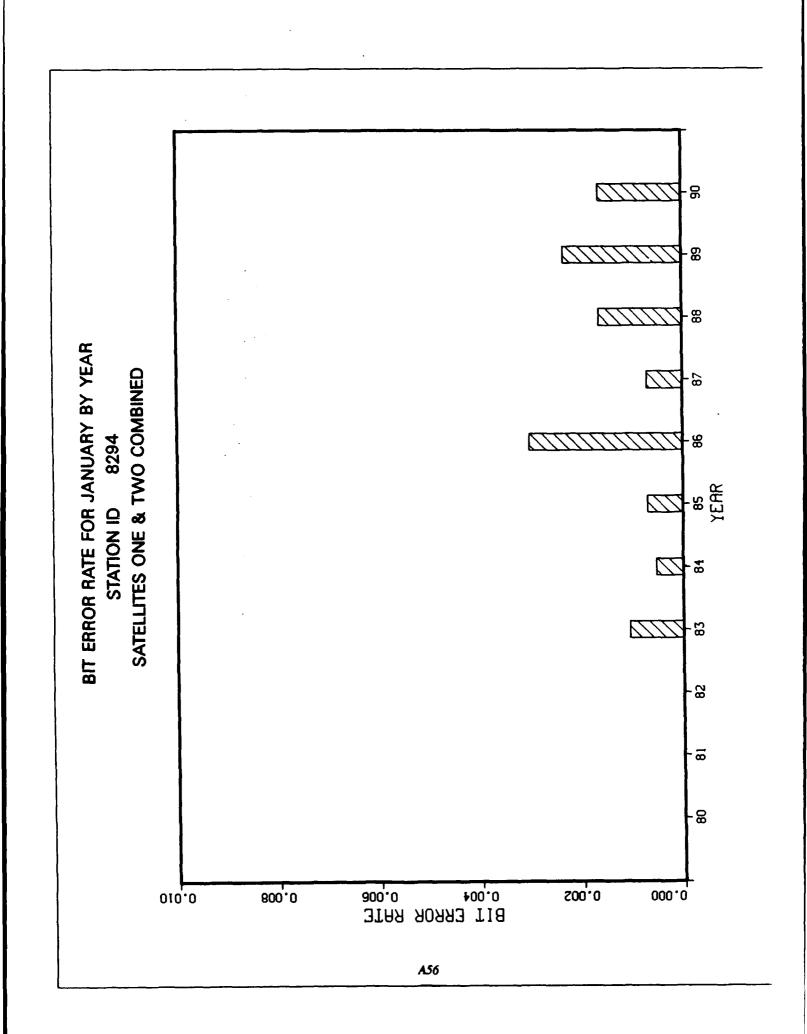


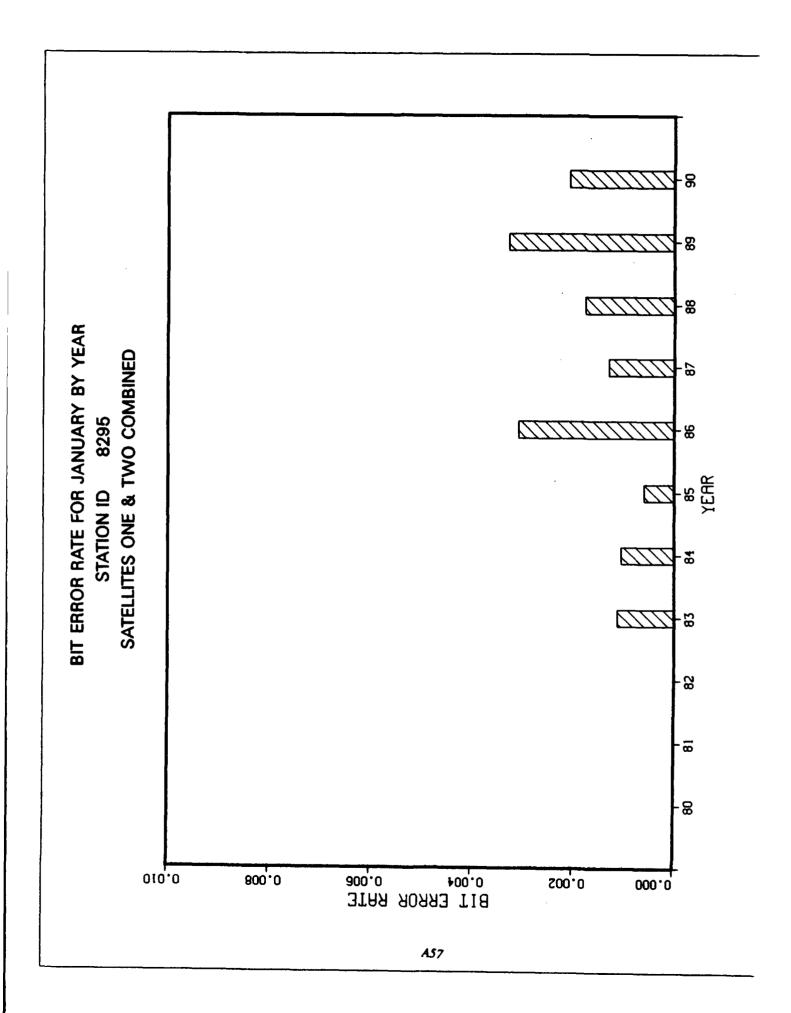


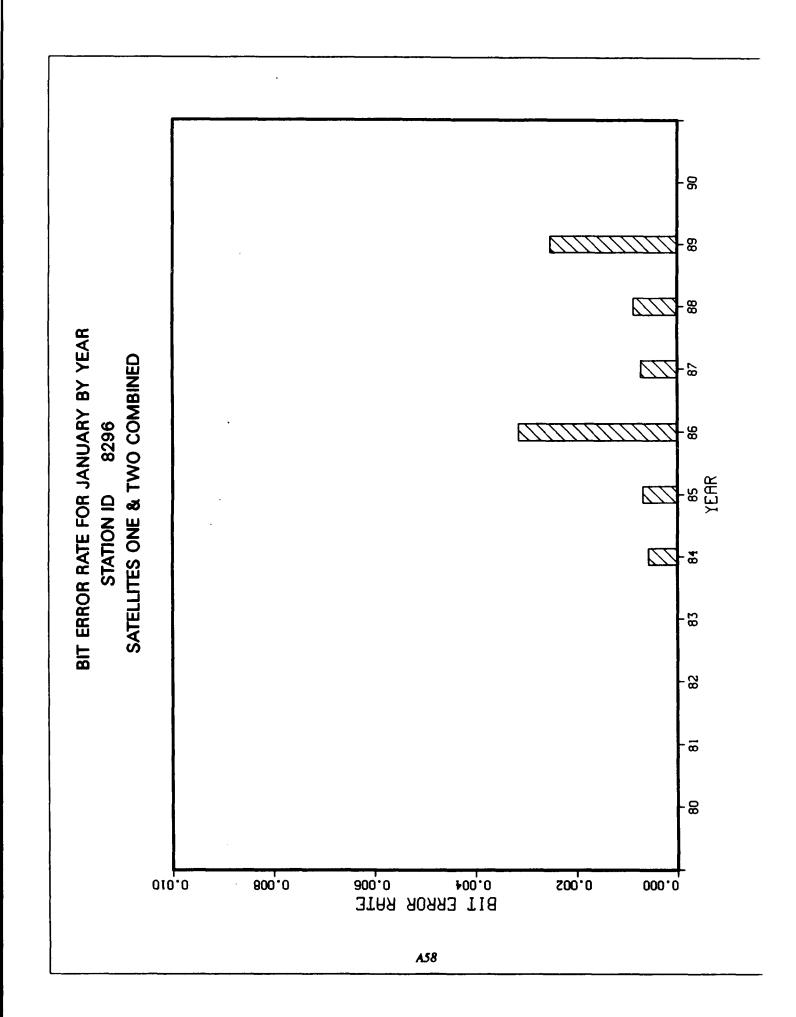


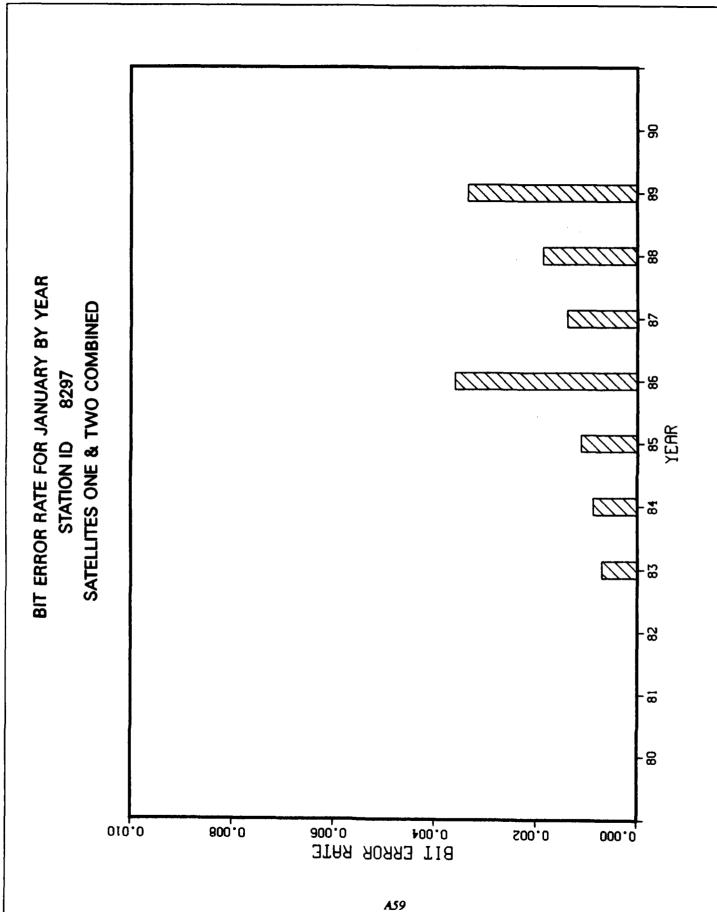


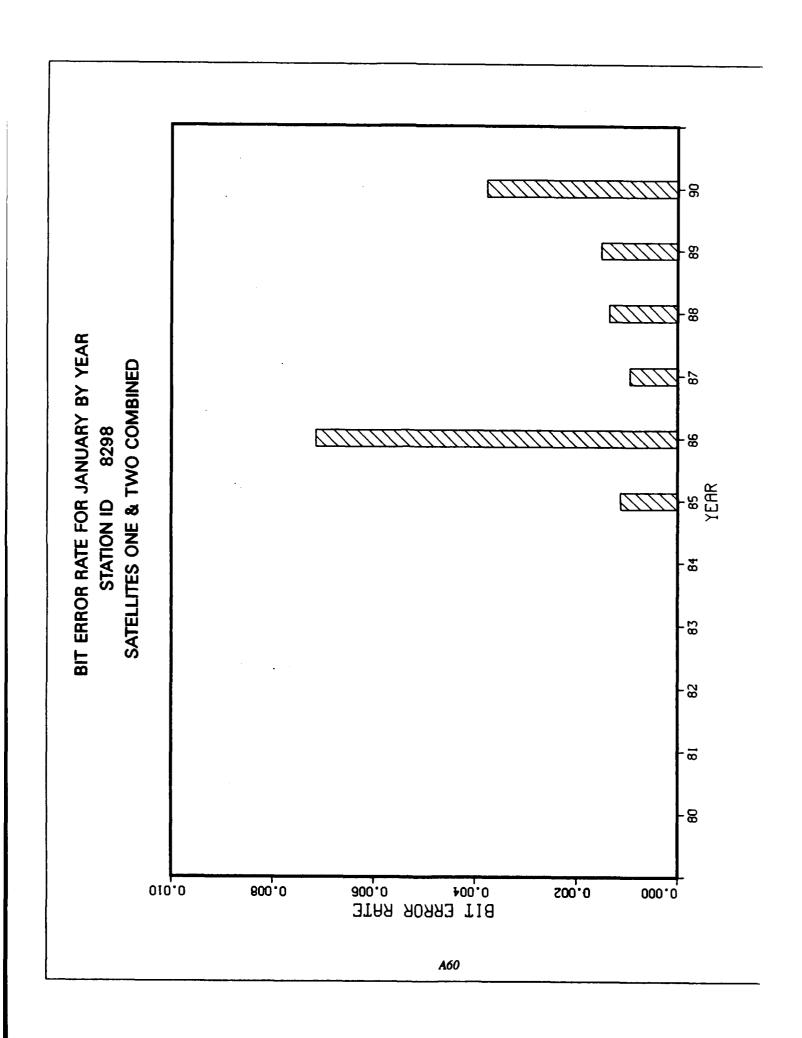


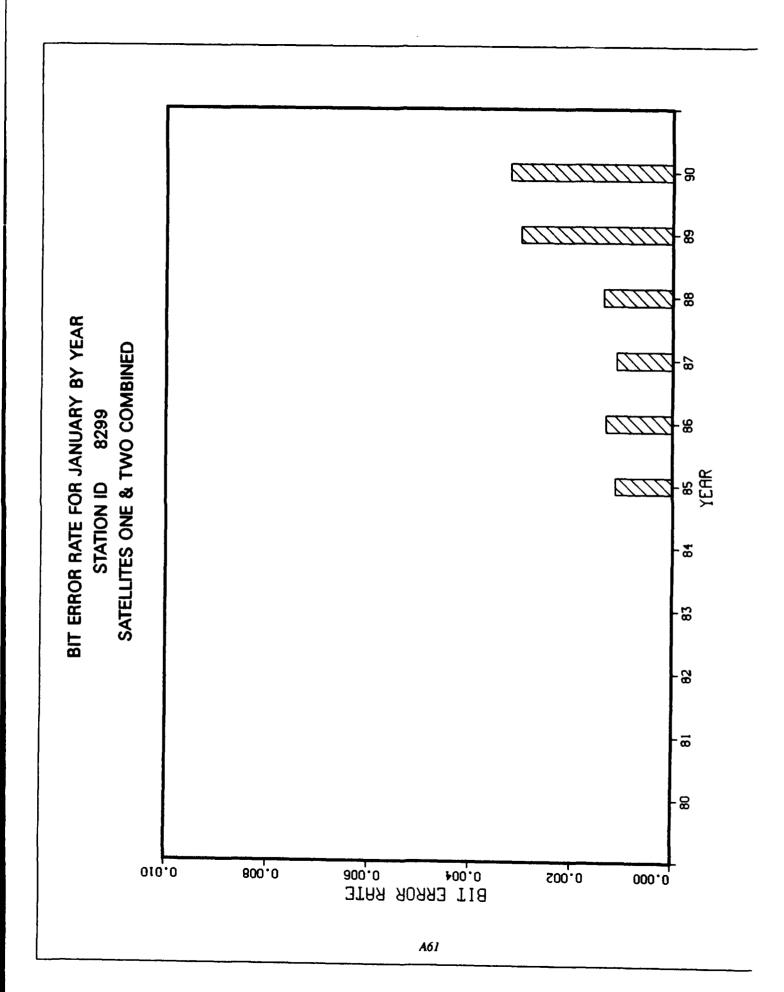






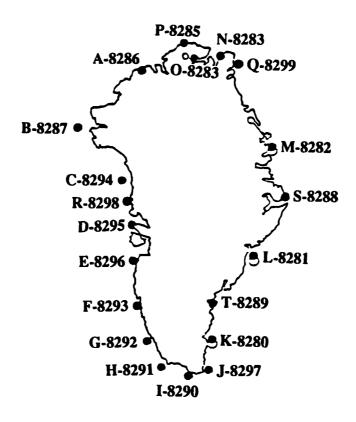




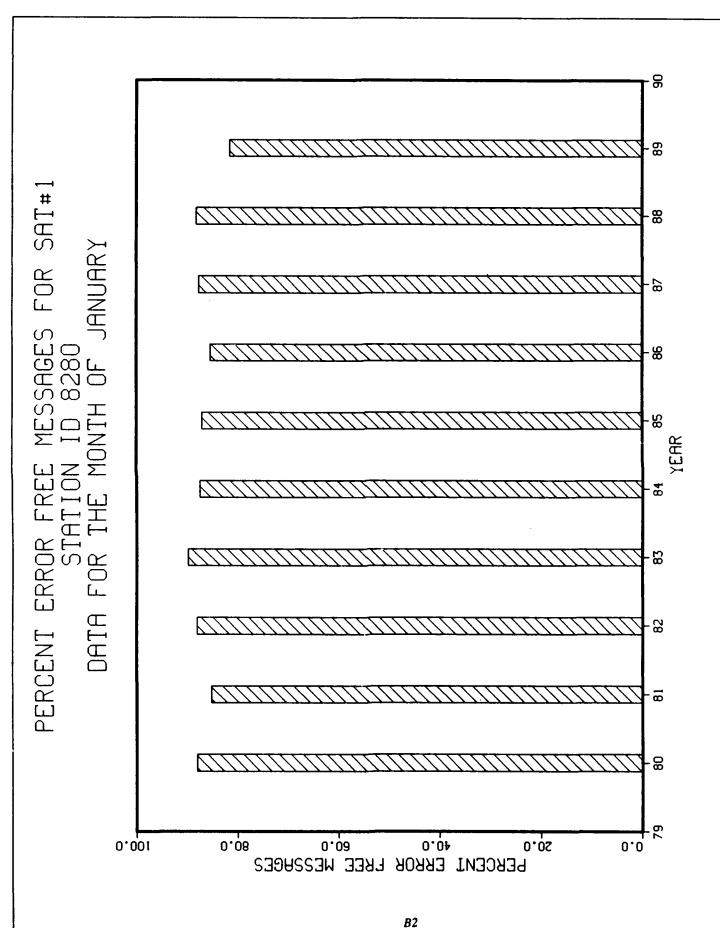


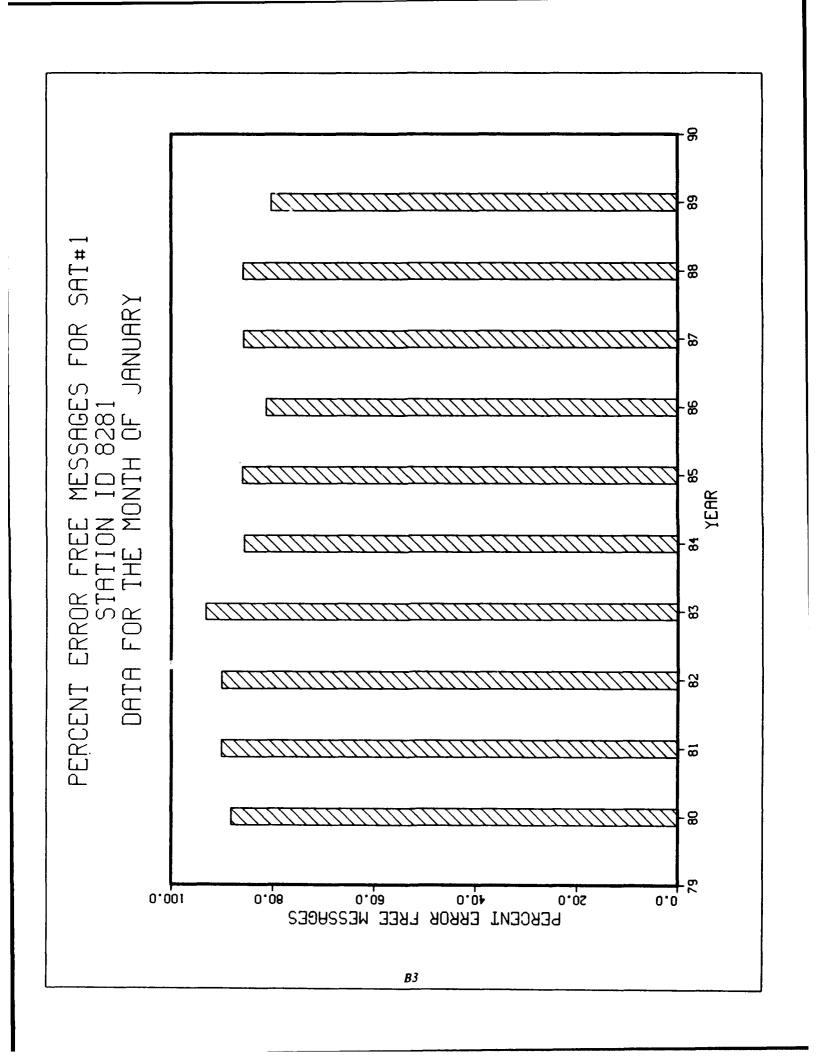
APPENDIX B

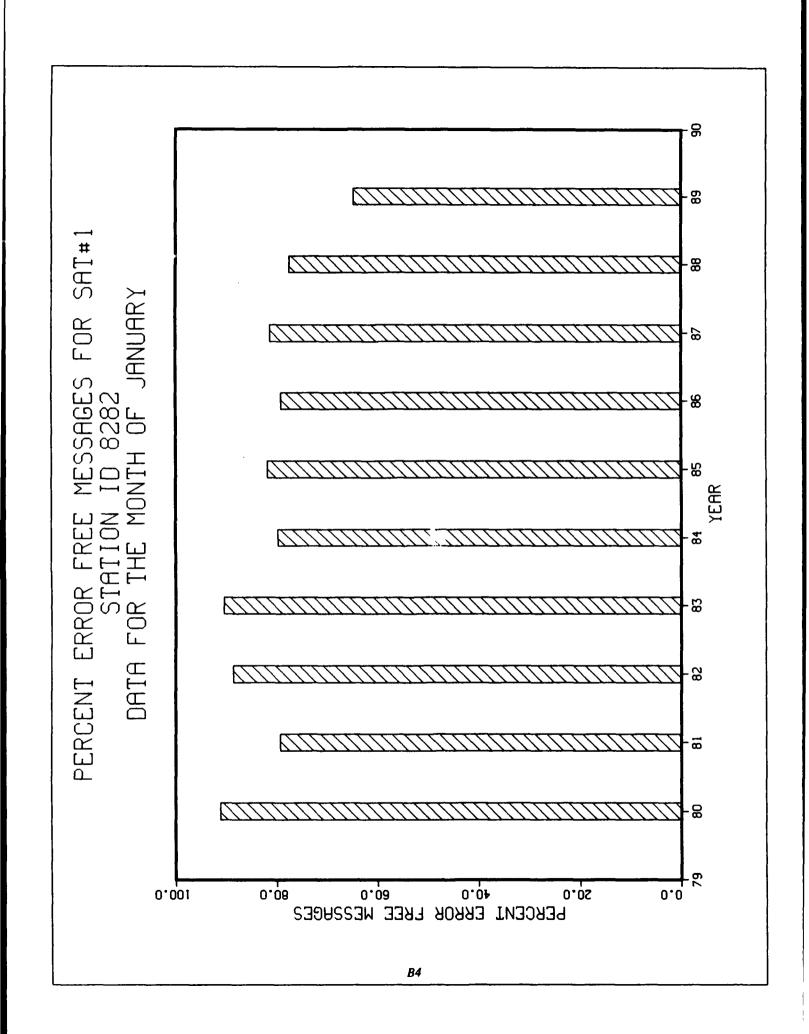
YEARLY ERROR-FREE-MESSAGES FOR JANUARY 1980 - JANUARY 1990

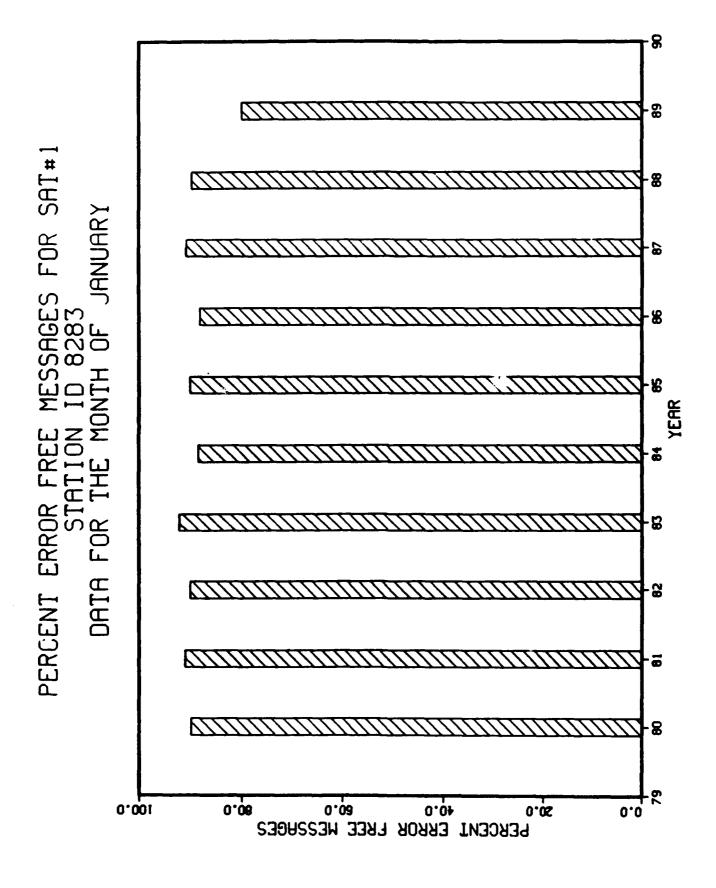


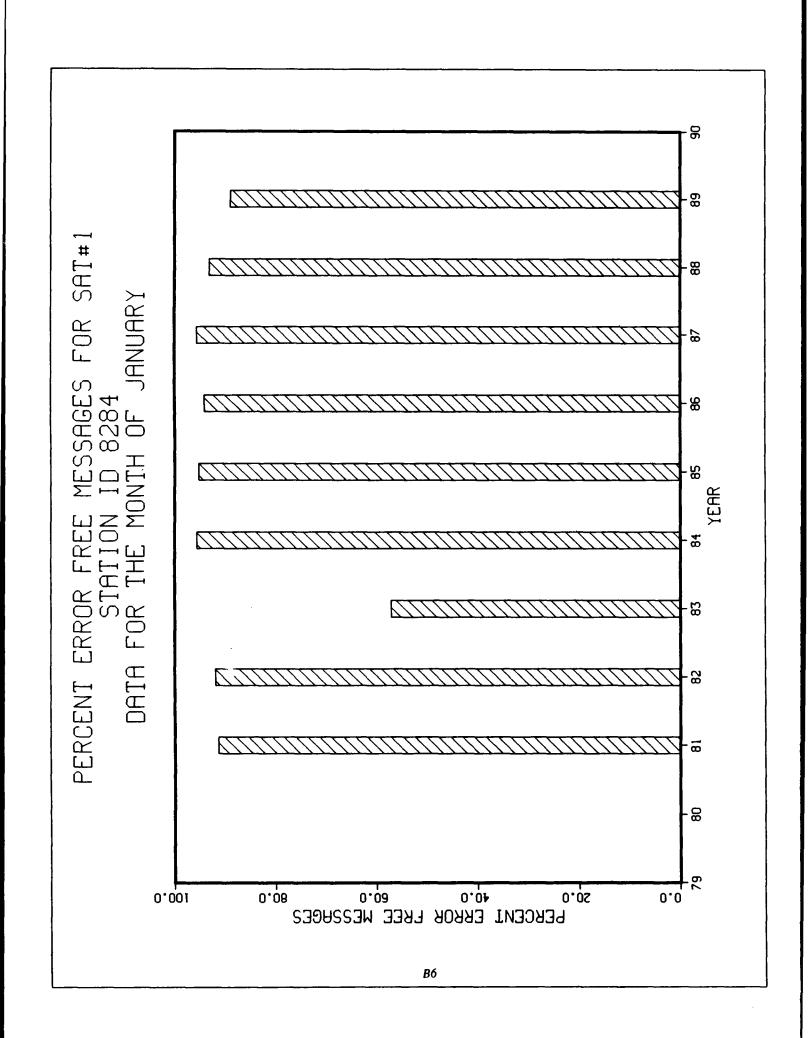
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	Station	Location	WMO-NR	Argos-NR	Established
A-	Hall Land	81-44'N,59-00'M	04-207	8286	jul.1982
B -	Carey Wer	76*38'N,73*00'W	04-203	8187	Aug. 1979
C-	Edderfugleøer	74*02'N,57*49'W	04-208	8294	Sep.1981
D-	Mugssuaq	70°41'H,54°37'H	04-214	8295	Aug. 1982
E-	Agto	67*47'N,53*58'W	04-228	8296	Aug. 1983
F-	Sioralik	63*01 'N, 52*33 'W	04-242	8293	Jun. 1983
G-	Frd.håbs isblink	62*34'N,50*25'W	04-253	8292	Jun.1982
H -	Munarssuit	60-46'N,48-25'W	04-266	8291	Jun.1981
I -	Angissoq	59*59'N,45*12'W	04-285	8290	Jun. 1981
J-	Prins Chr.sund	60°02'N,43°07'W	04-390	8297	Okt.1982
K -	Ikermiarssuk	61°56'N,42°D4'W	04-381	8280	Aug.1978
L-	Aputiteq	67-47'N, 32-18'W	04-351	6281	Aug.1978
M-	Daneborg	74-18'N,20-13'W	U4-330	8282	Aug. 1978
N-	Station Mord	81-36'H, 16-40'W	04-312	8283	Sep.1979
0 -	Kep Harald Moltke	82-09'N, 29-53'W	04-305	8284	Aug. 1979
P -	Kap Morris Jessup	83*40'H, 33*22'W	04-301	8285	Jul.1979
S -	Kap Tobin	70*25'N, 21*58'W	04-340	8288	Aug. 1985
T-	Ikereit	64*47'N,40*18'W	04-373	#287	Okt.1986
Q-	Krøyers Holme	80-41'N, 13-55'W	04-313	8299	Jul.1984
R-	Upernevik	72*47'H,56*10'W	04-209	0290	Aug. 1984
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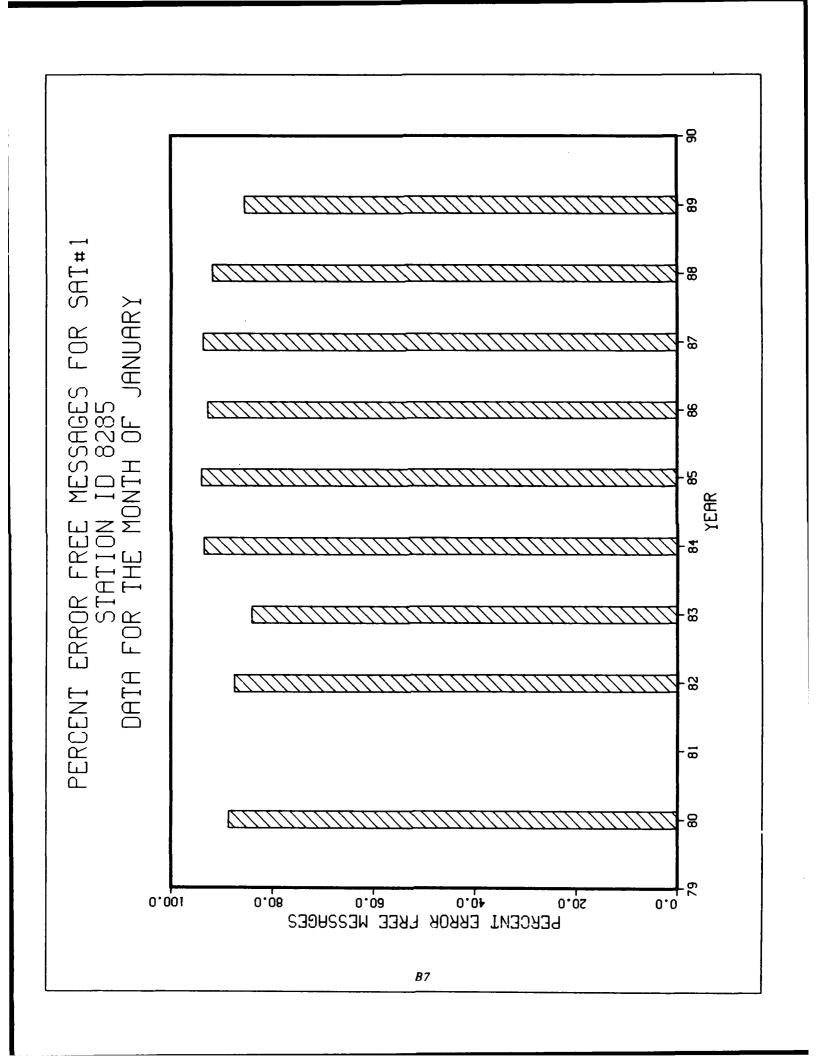


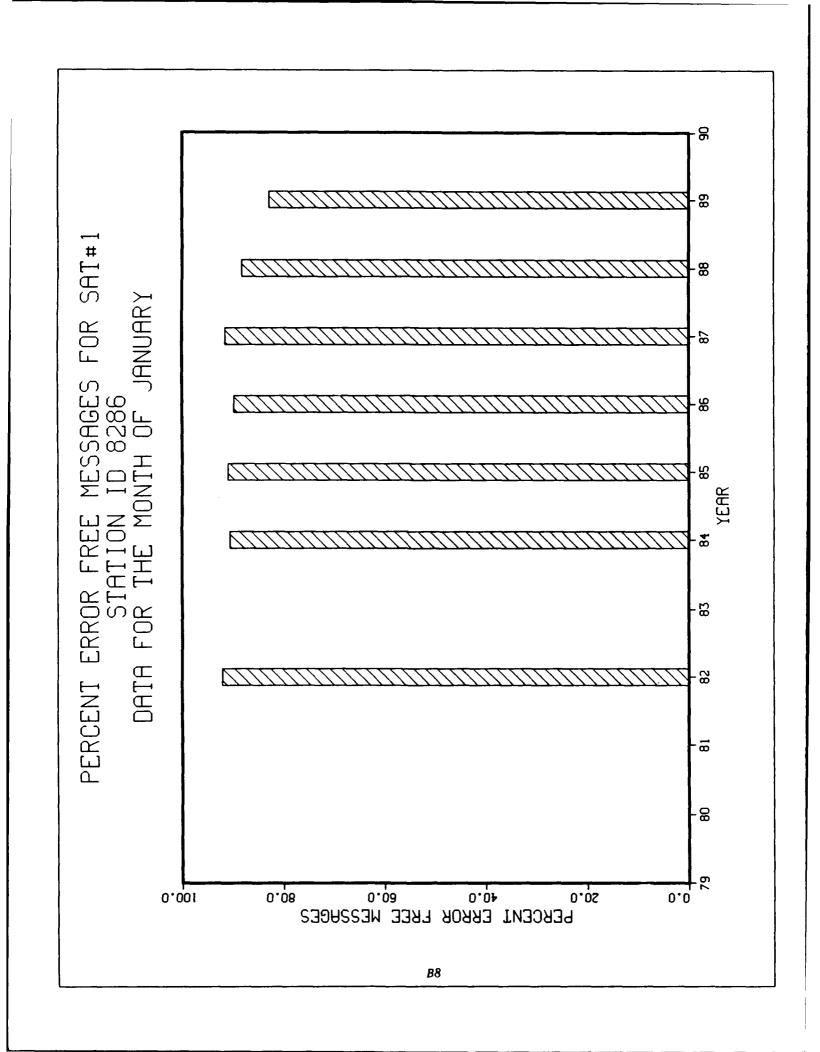


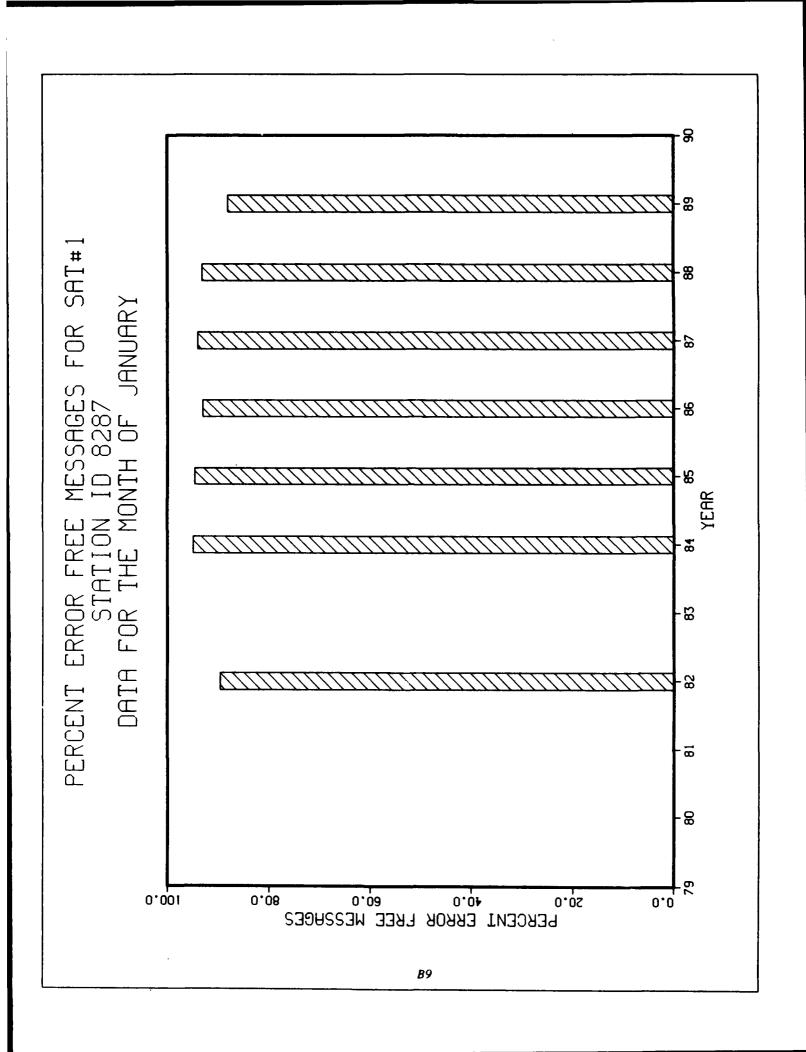


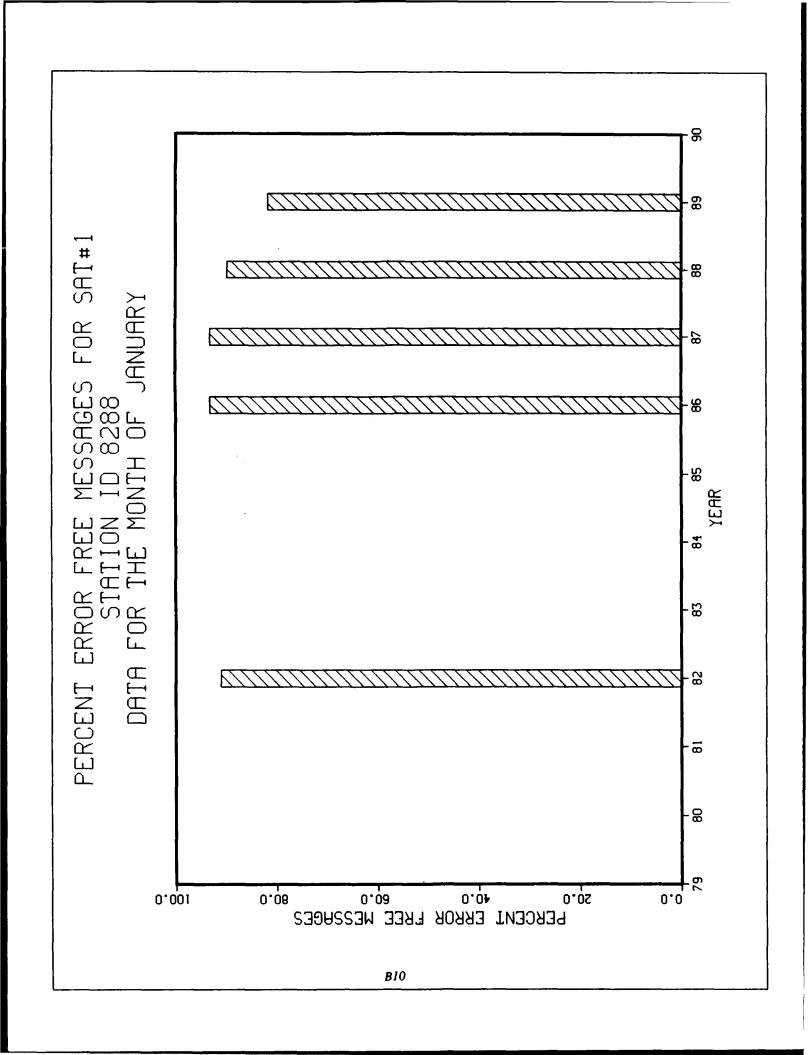


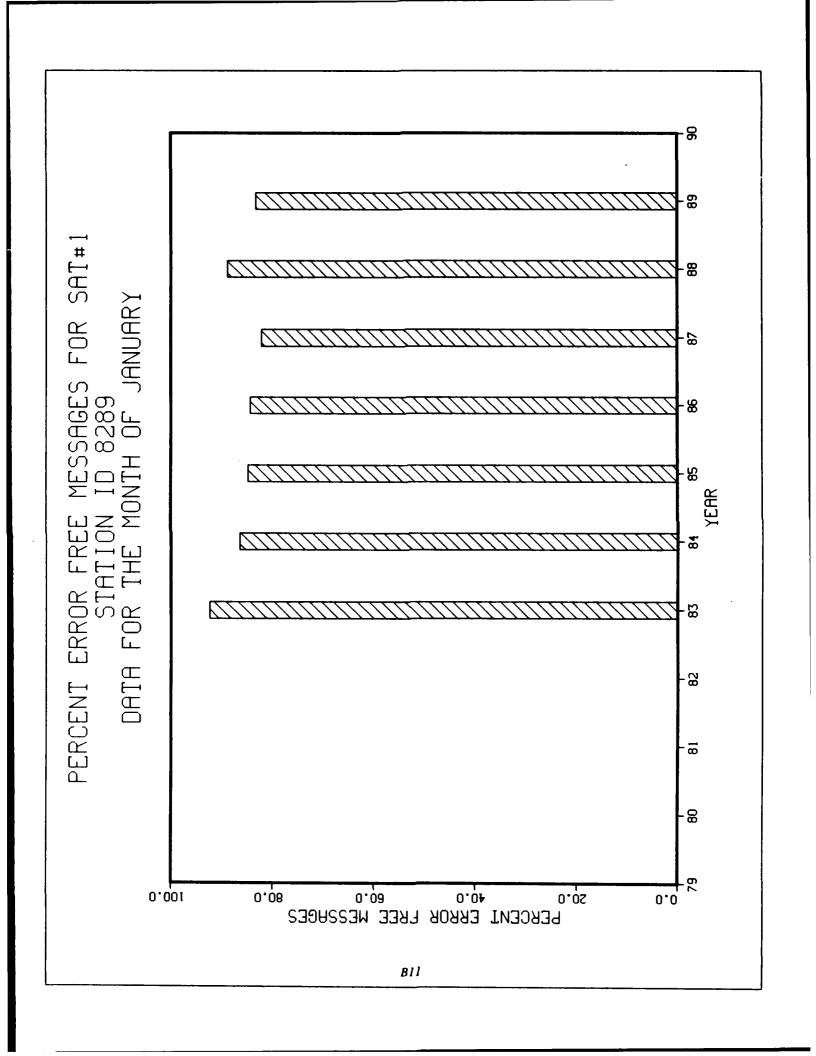


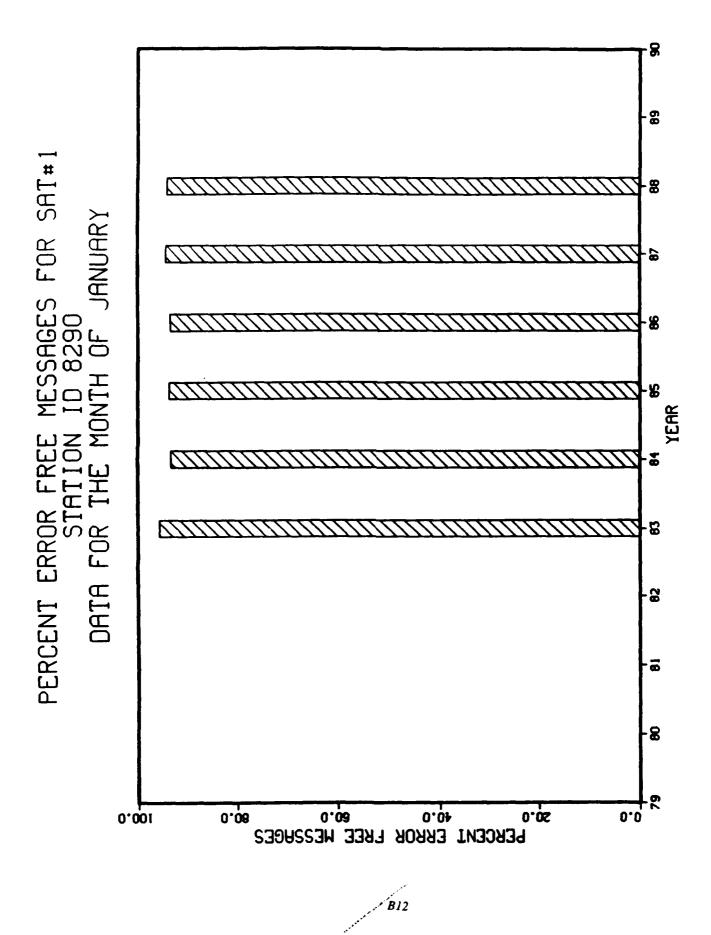


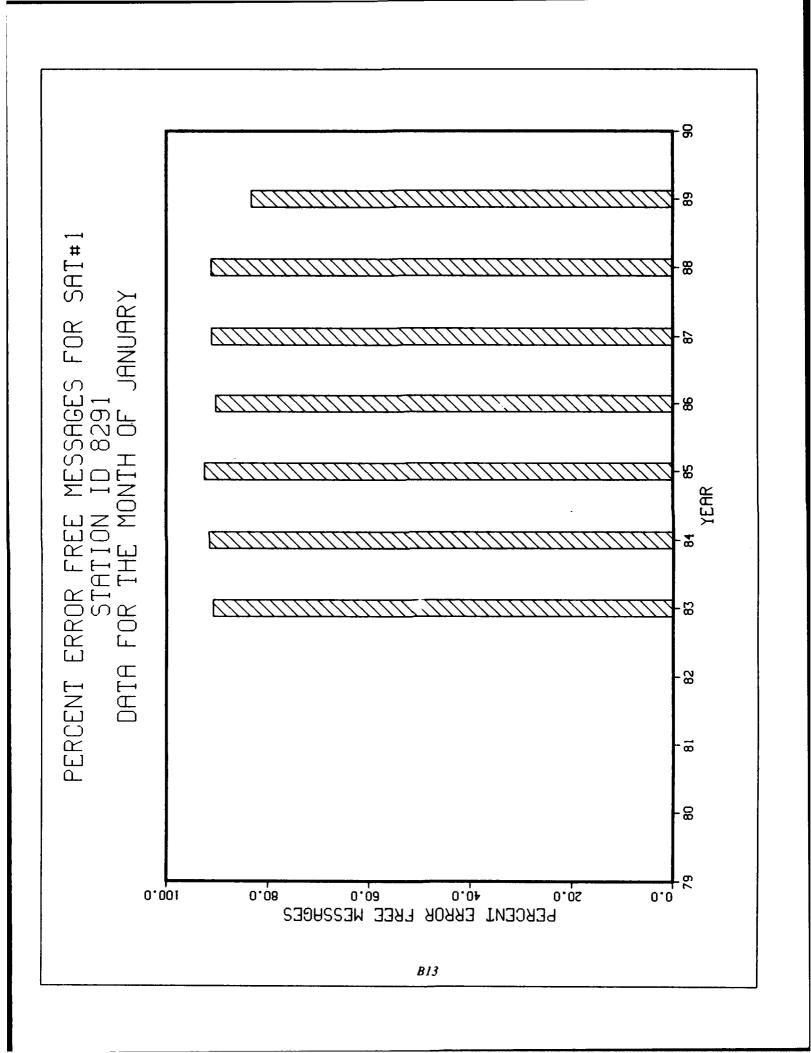


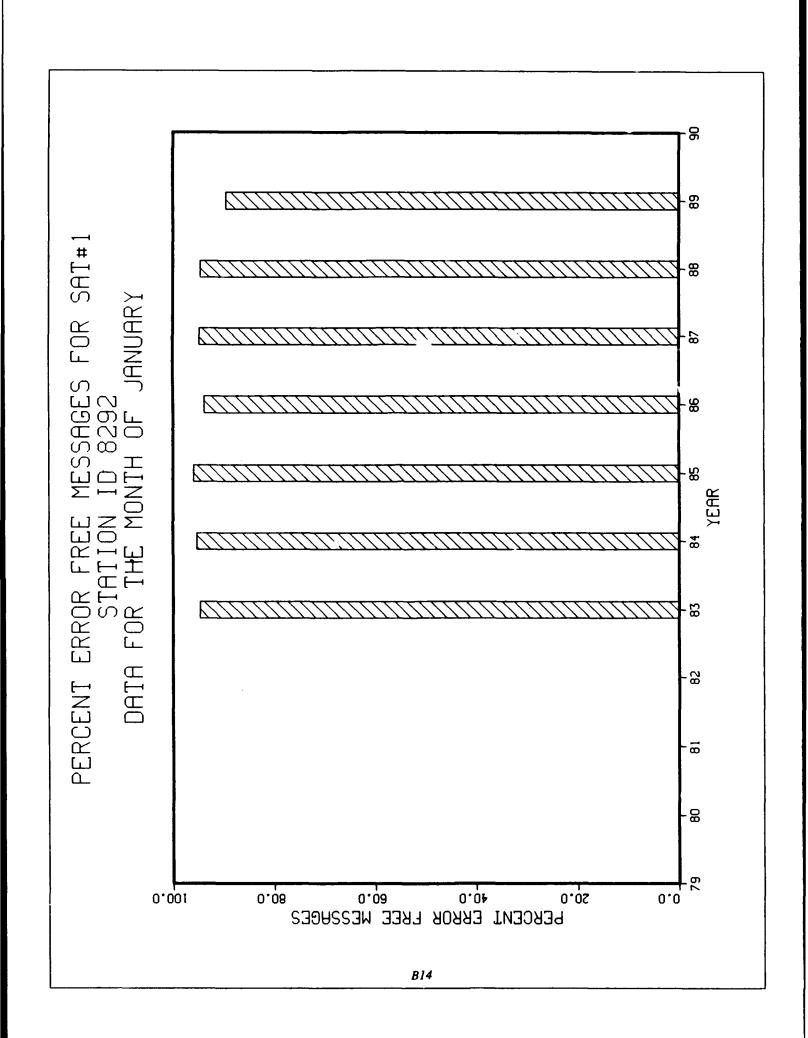


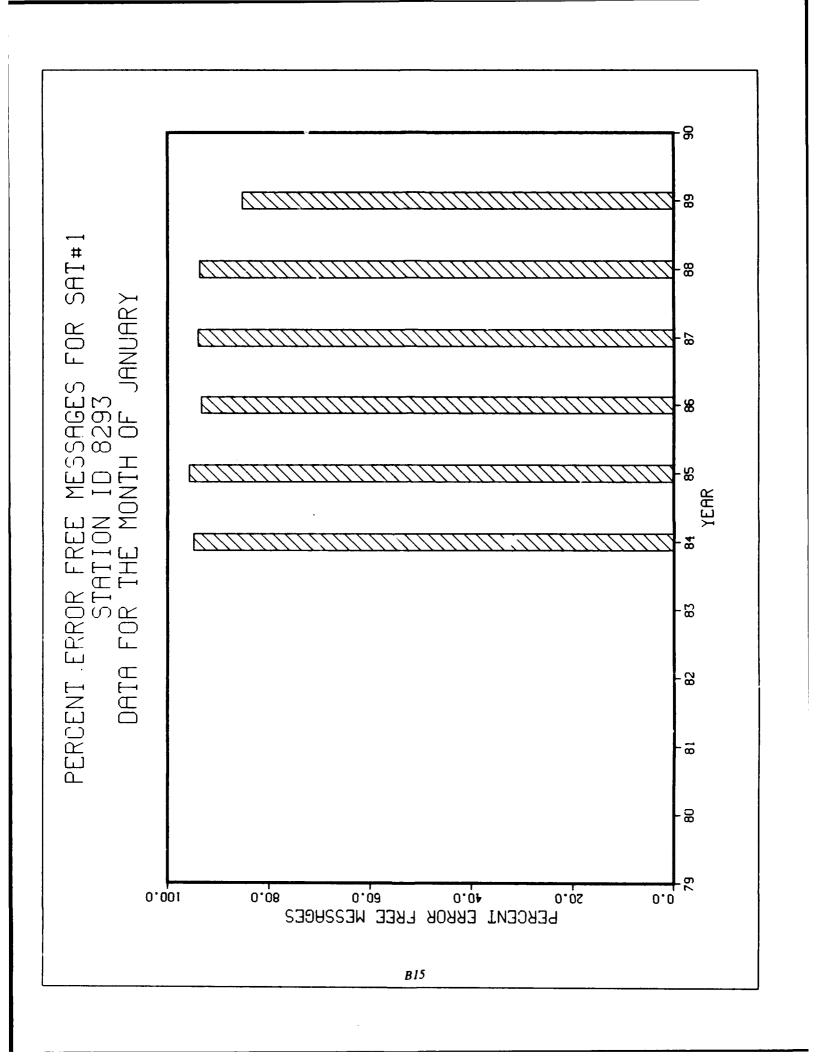


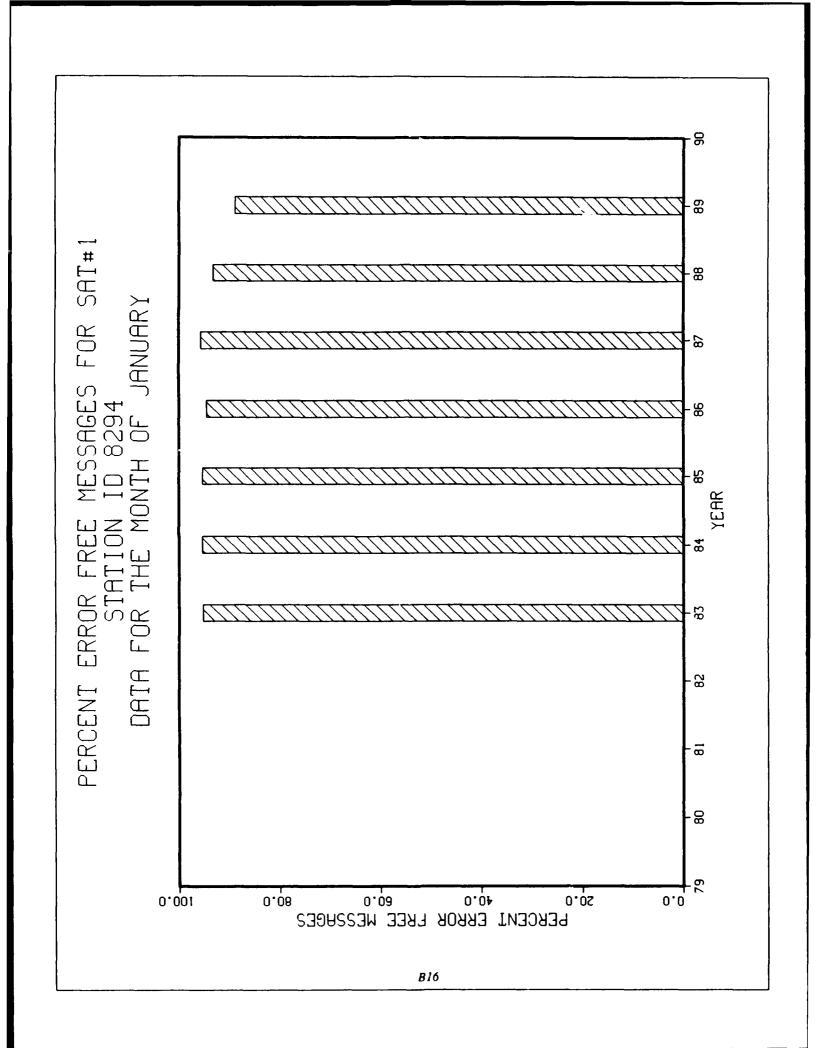


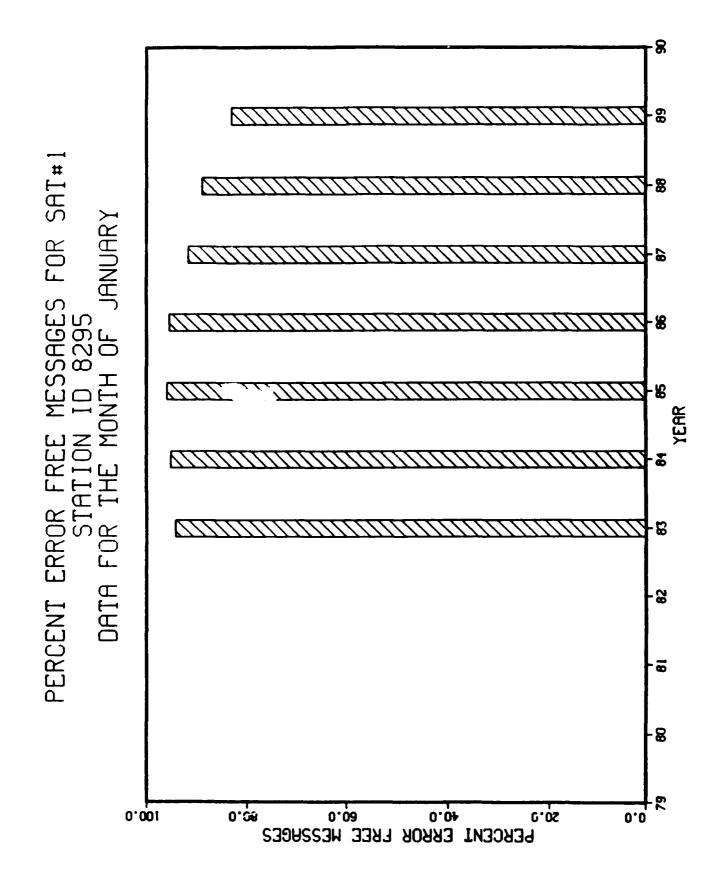


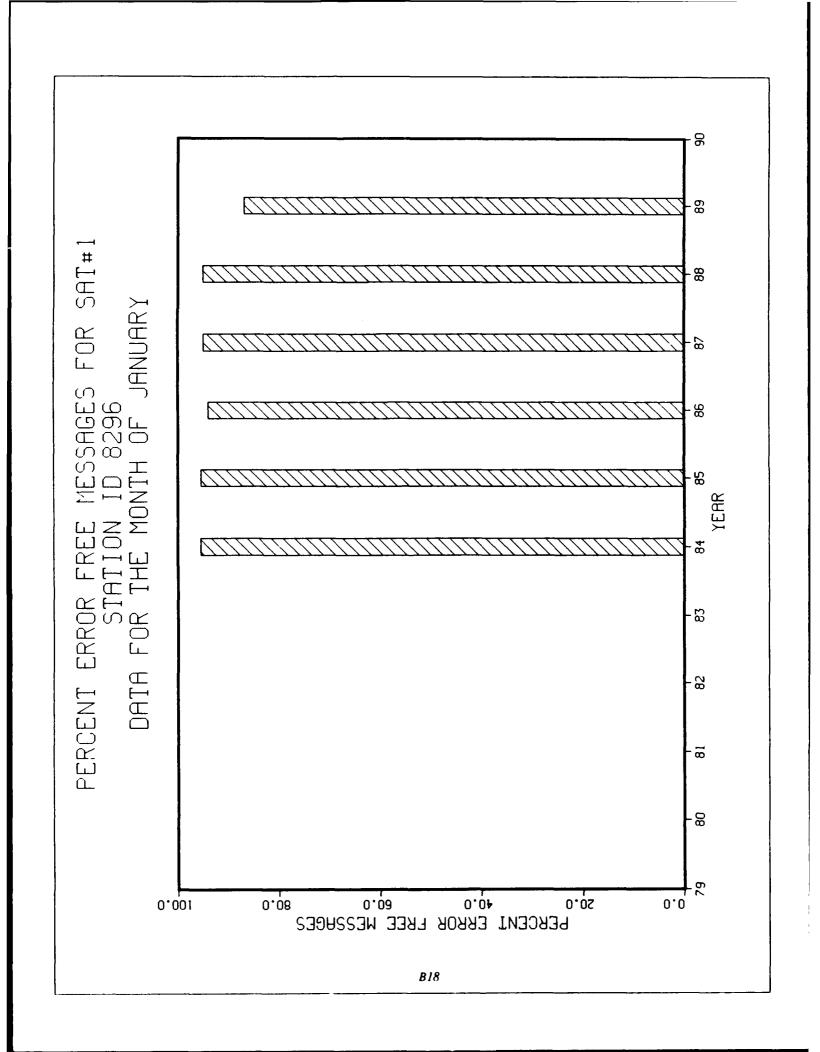


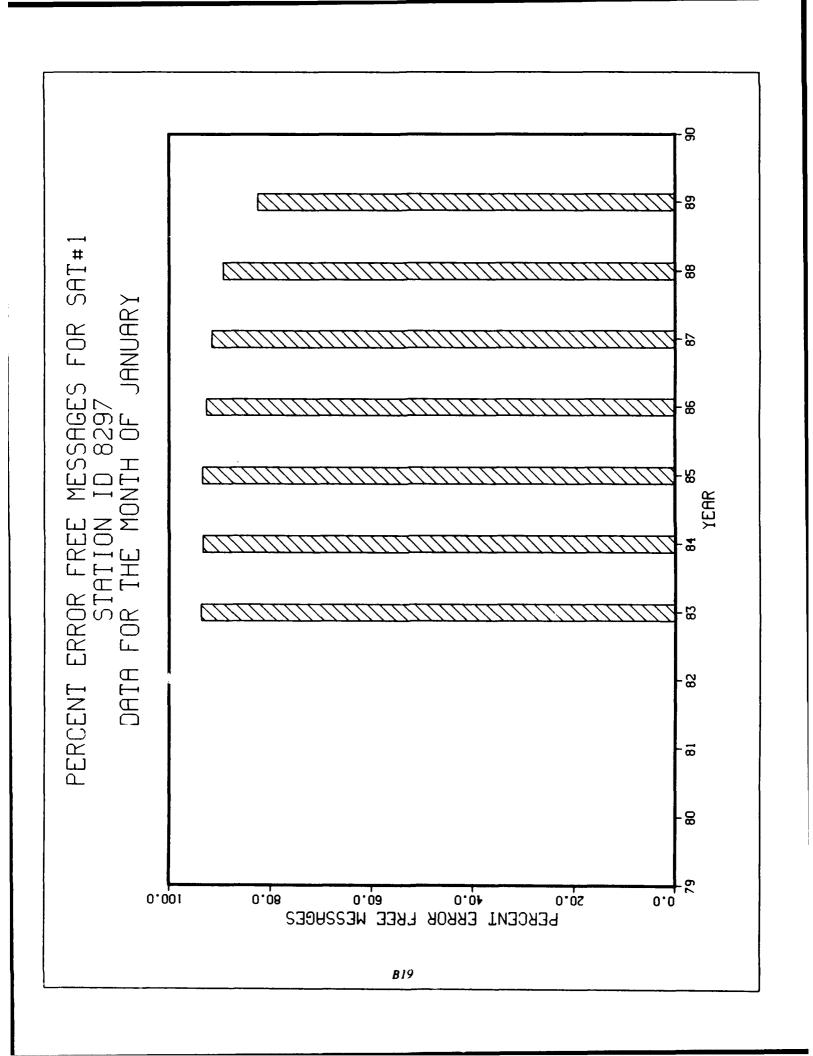


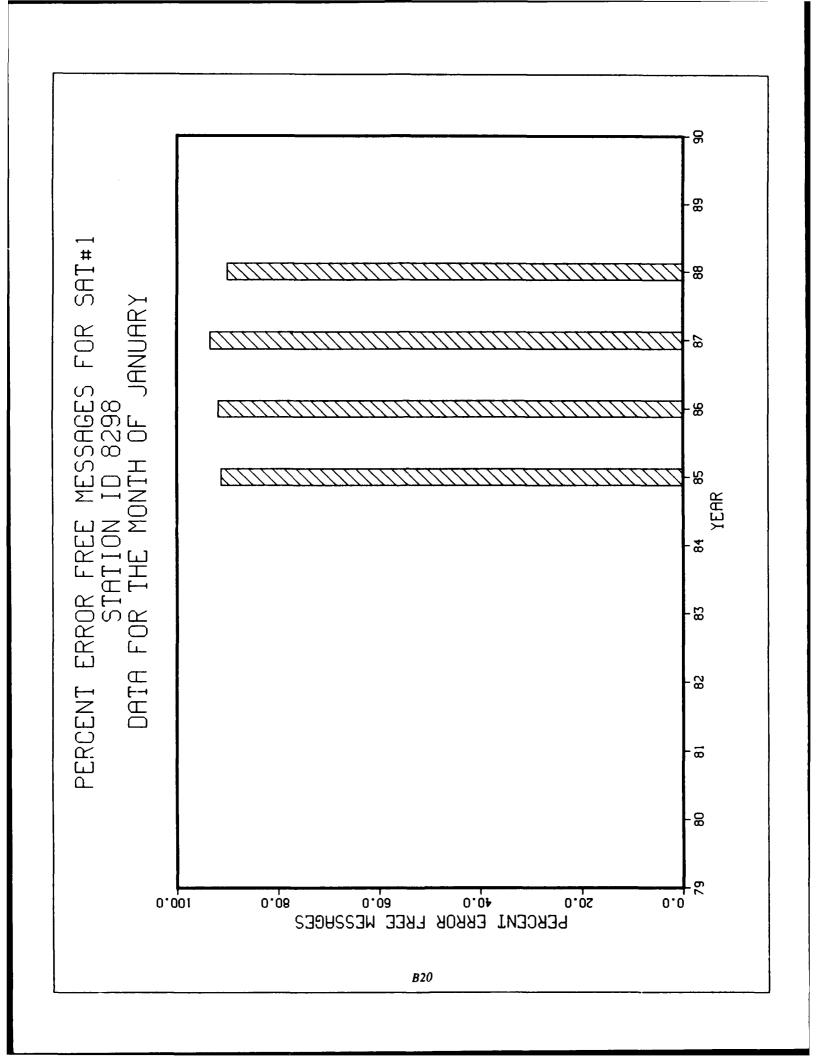


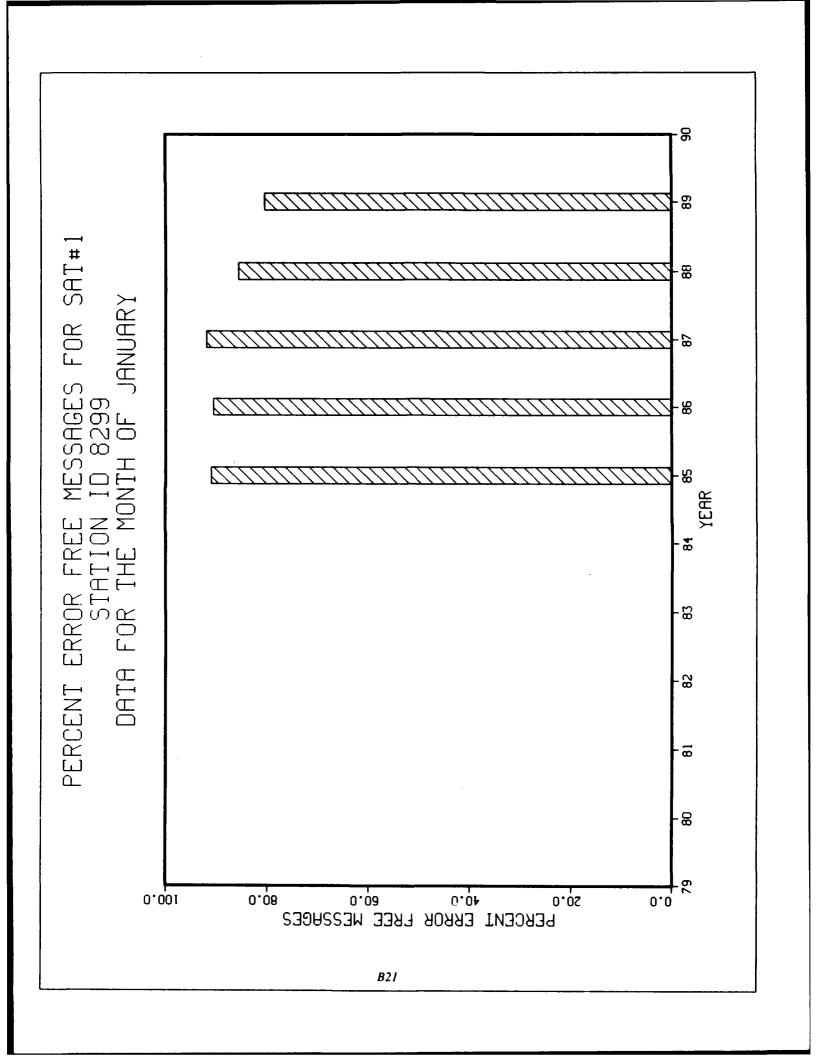


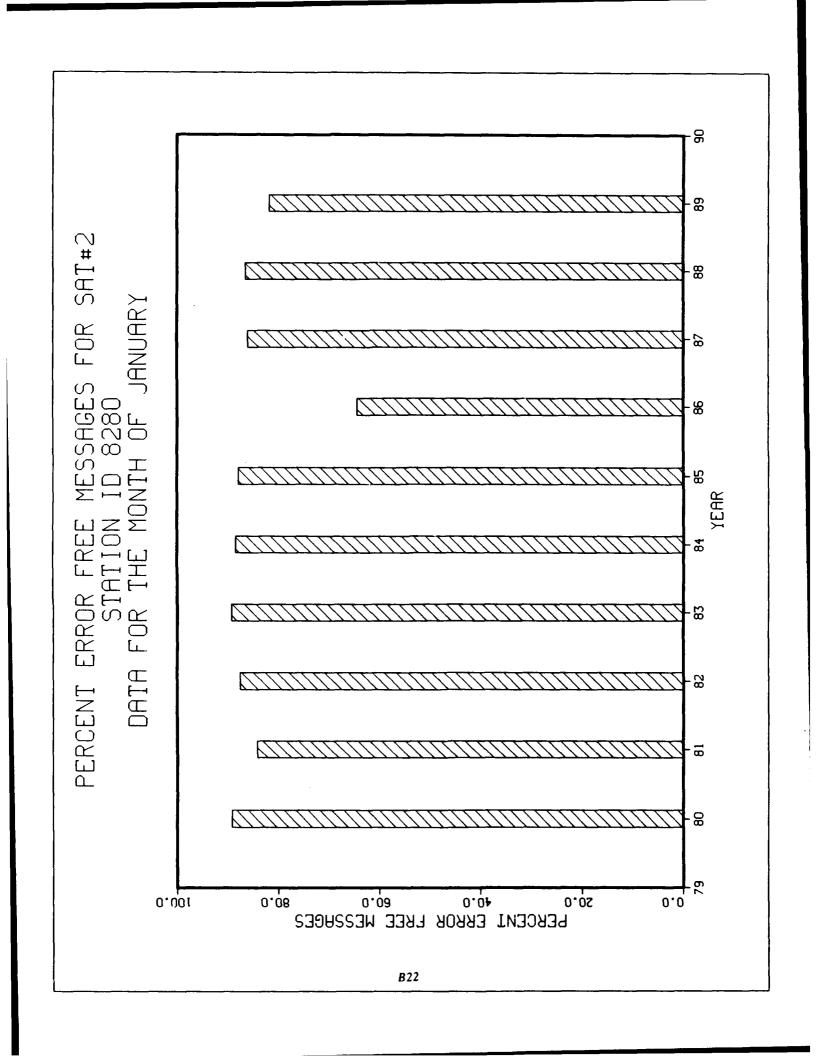


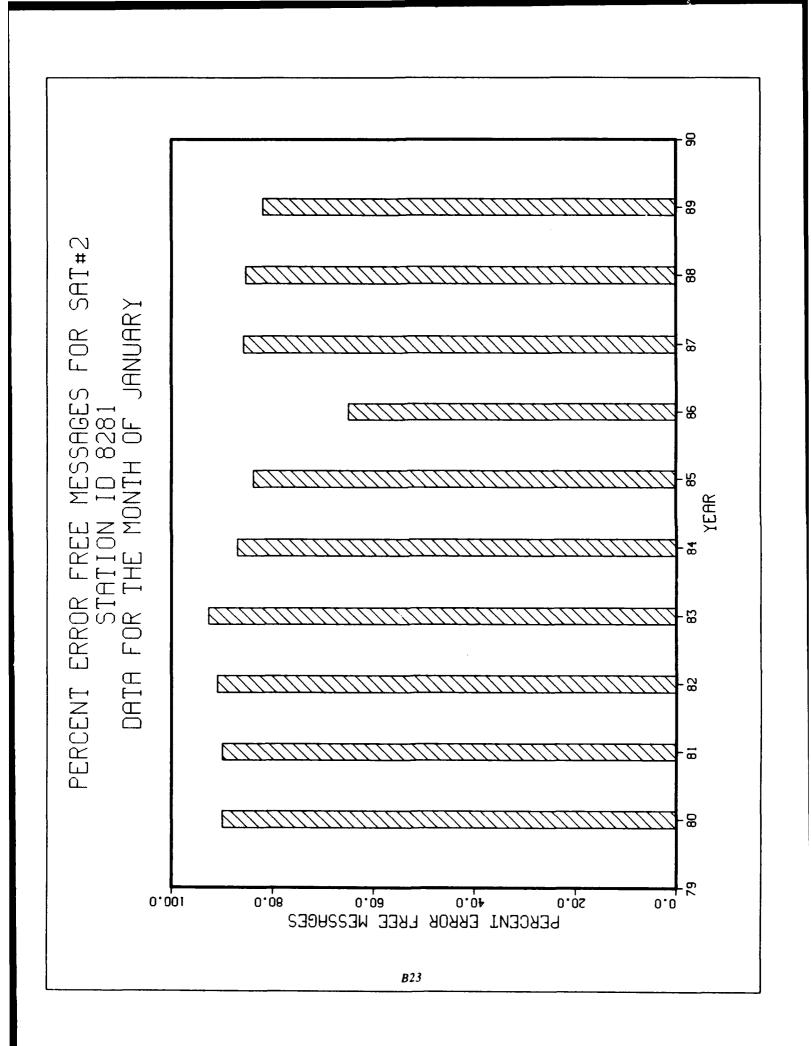


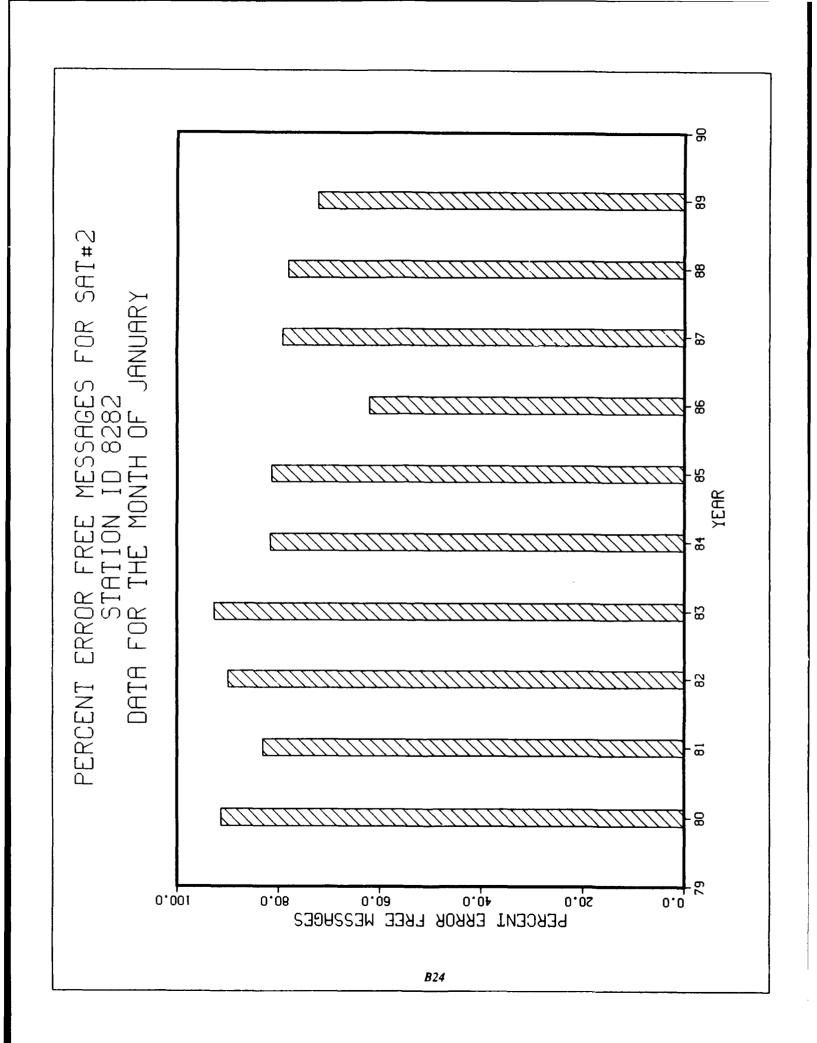


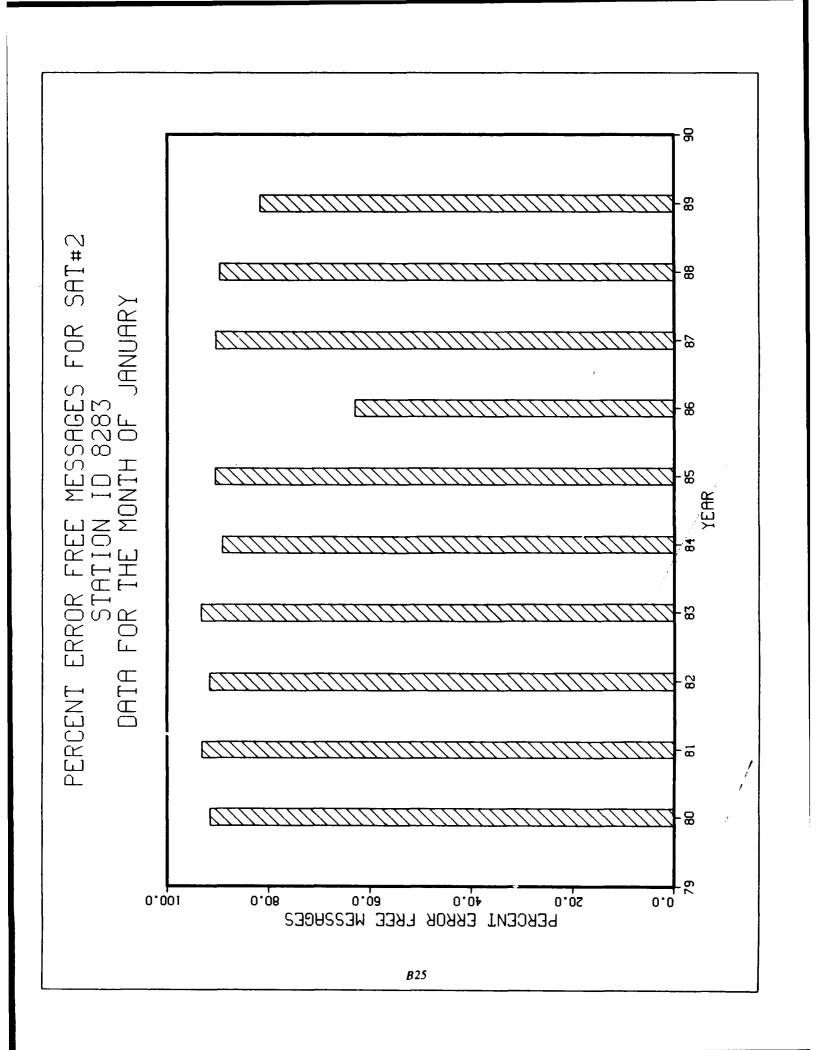


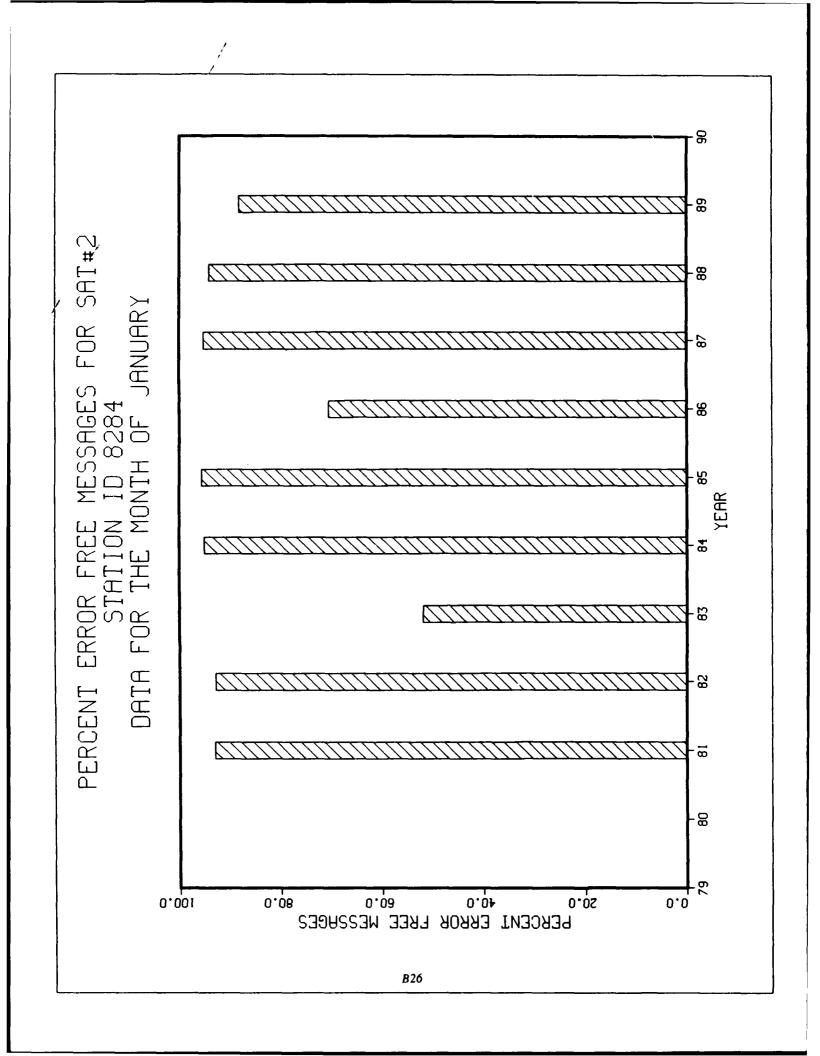


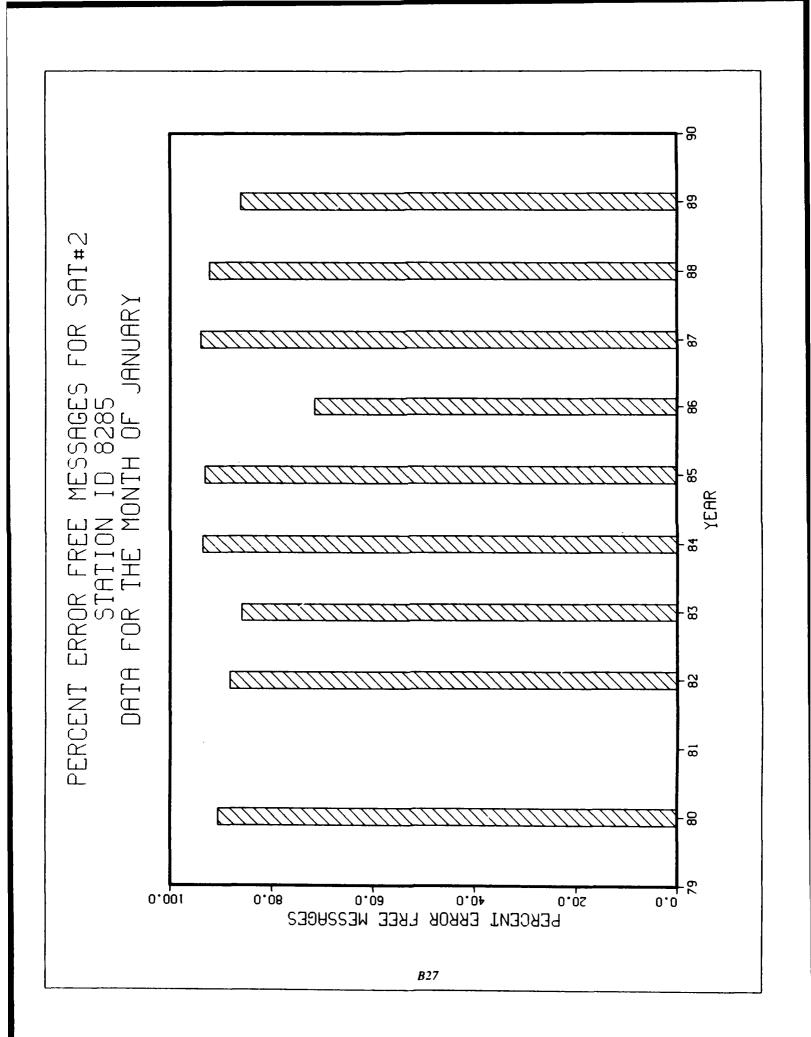


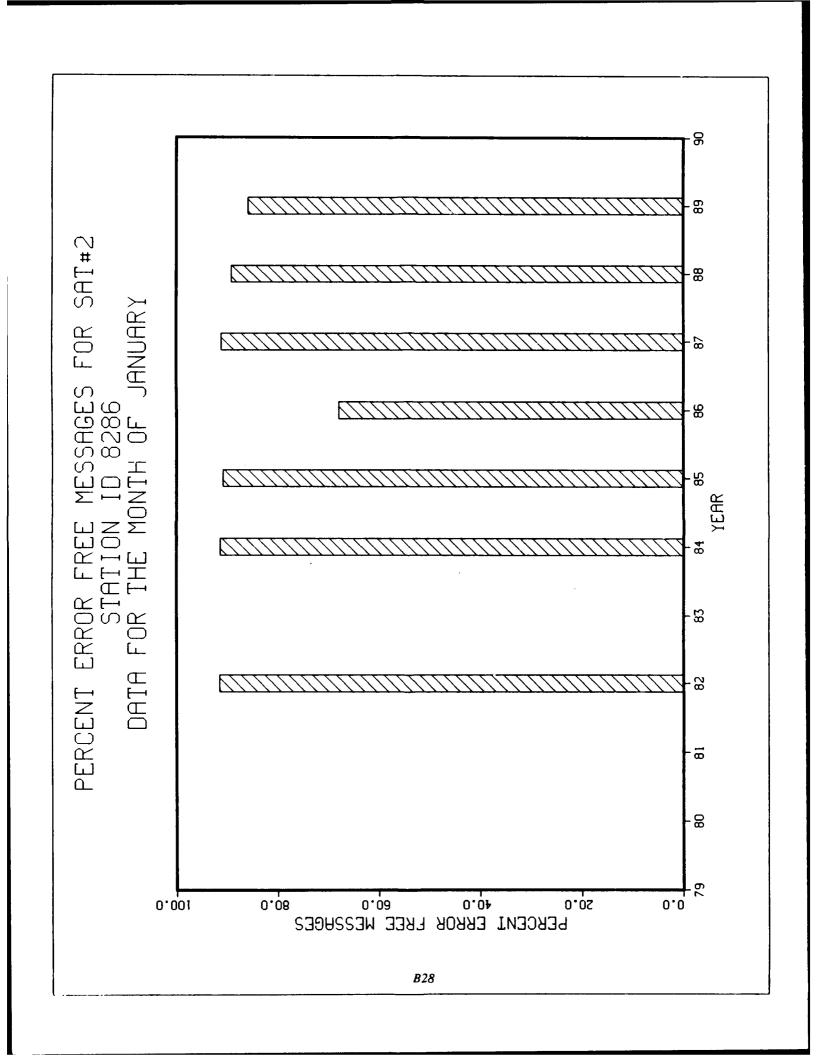


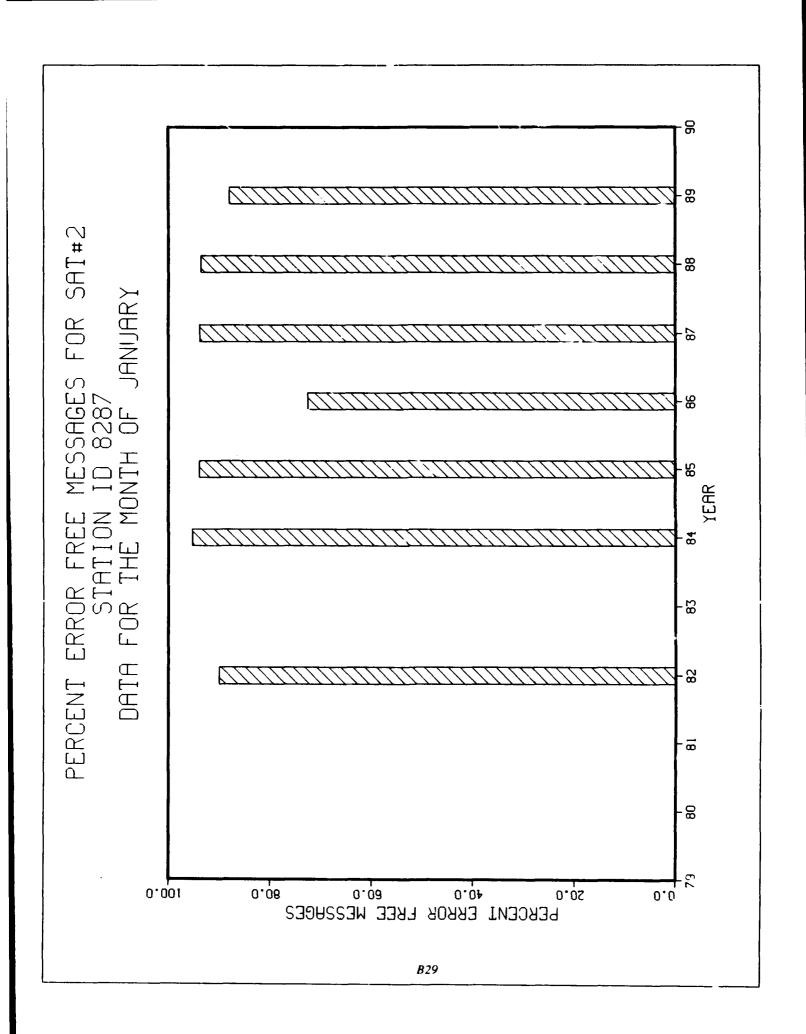


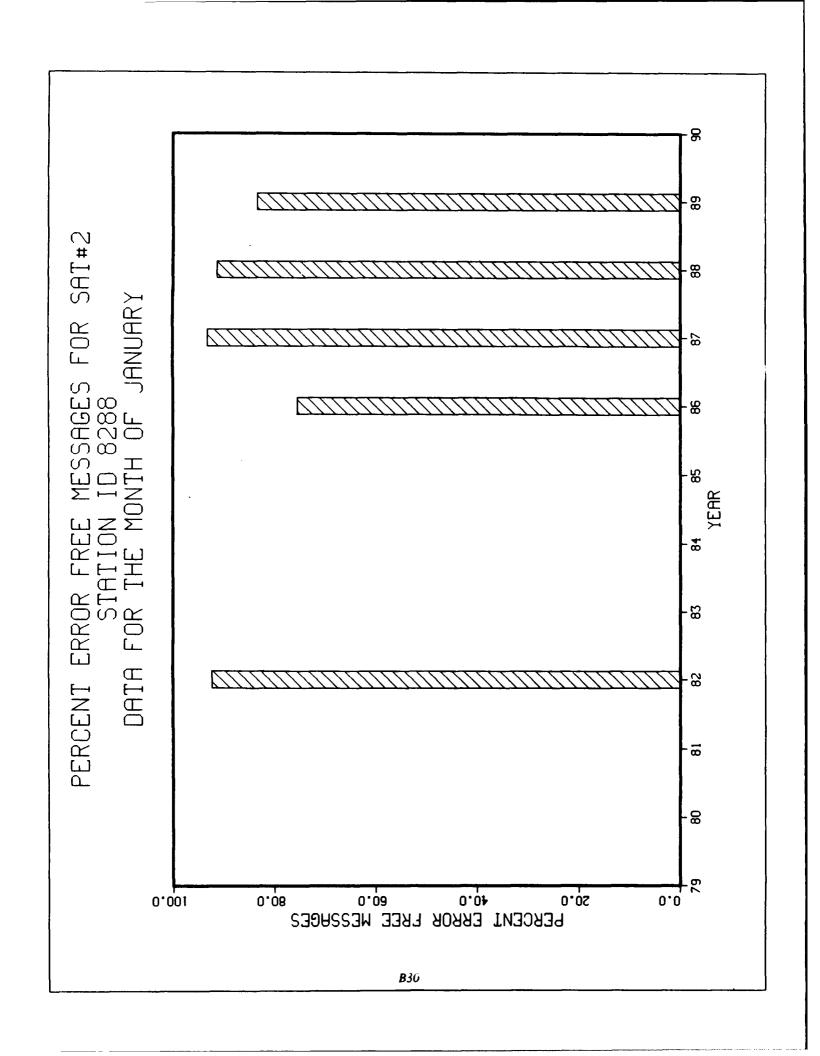


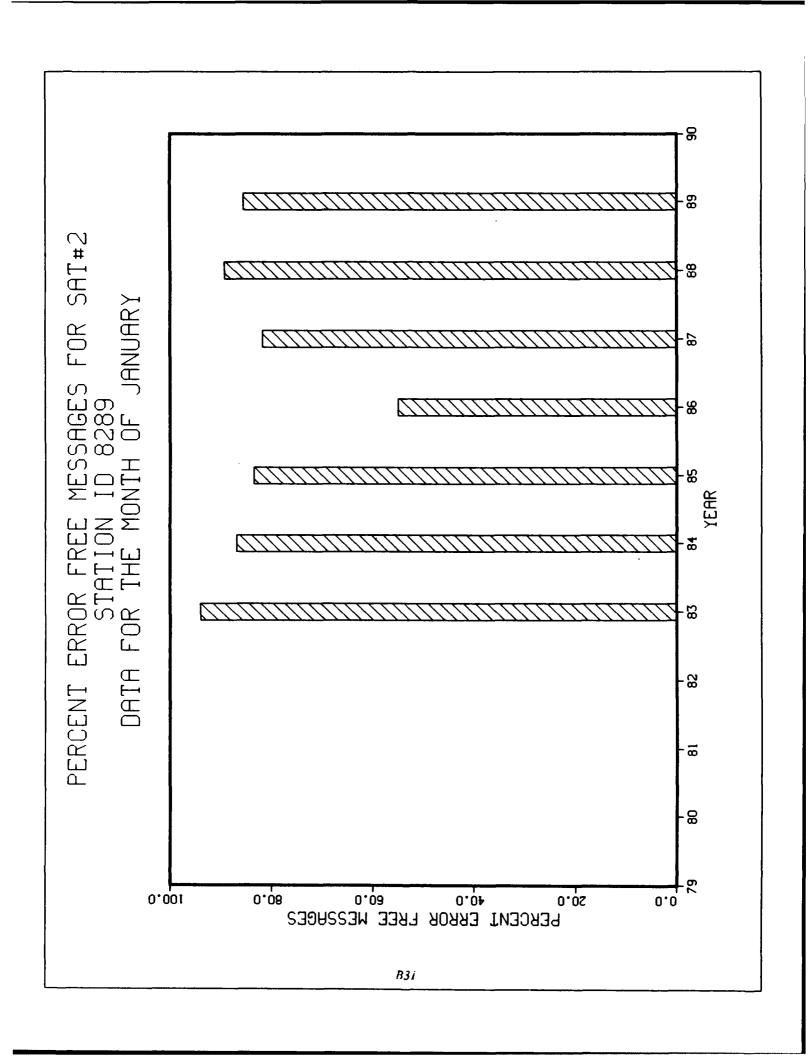


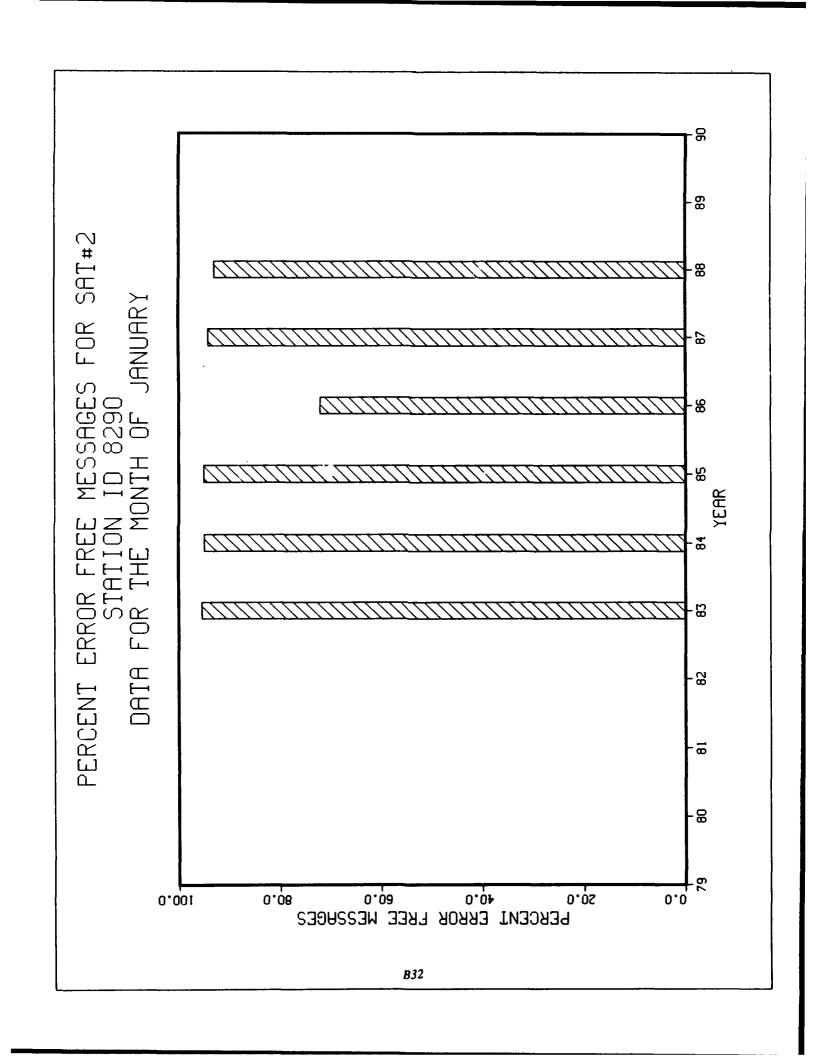


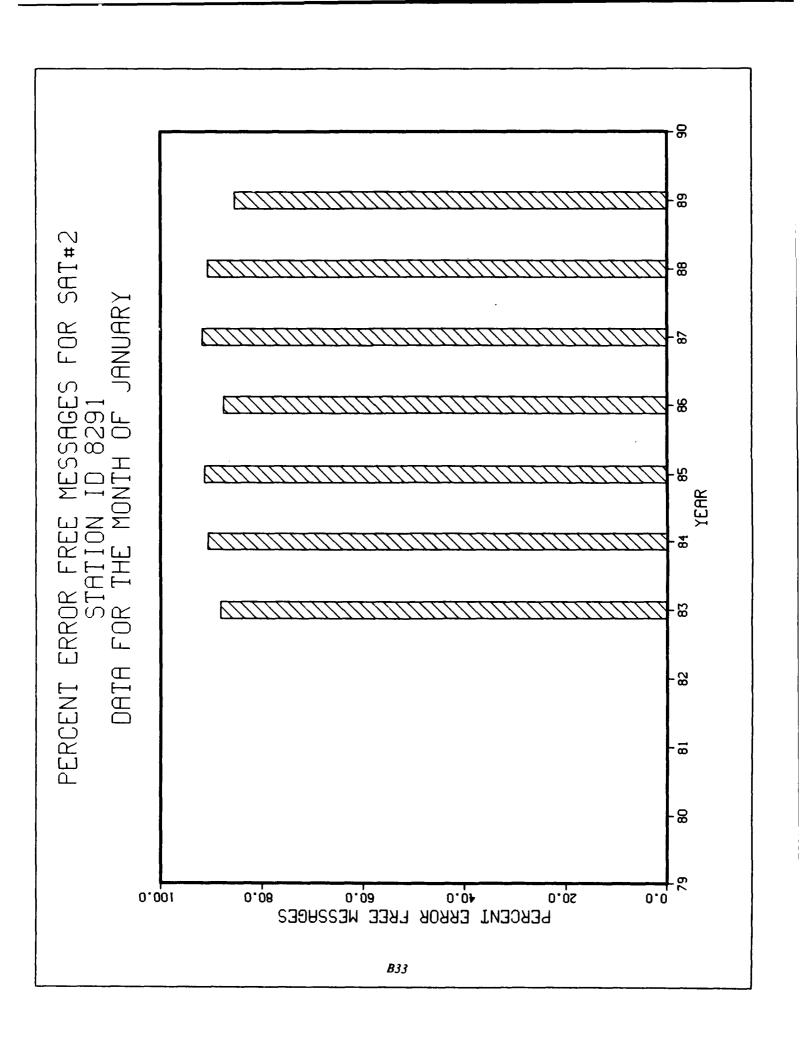


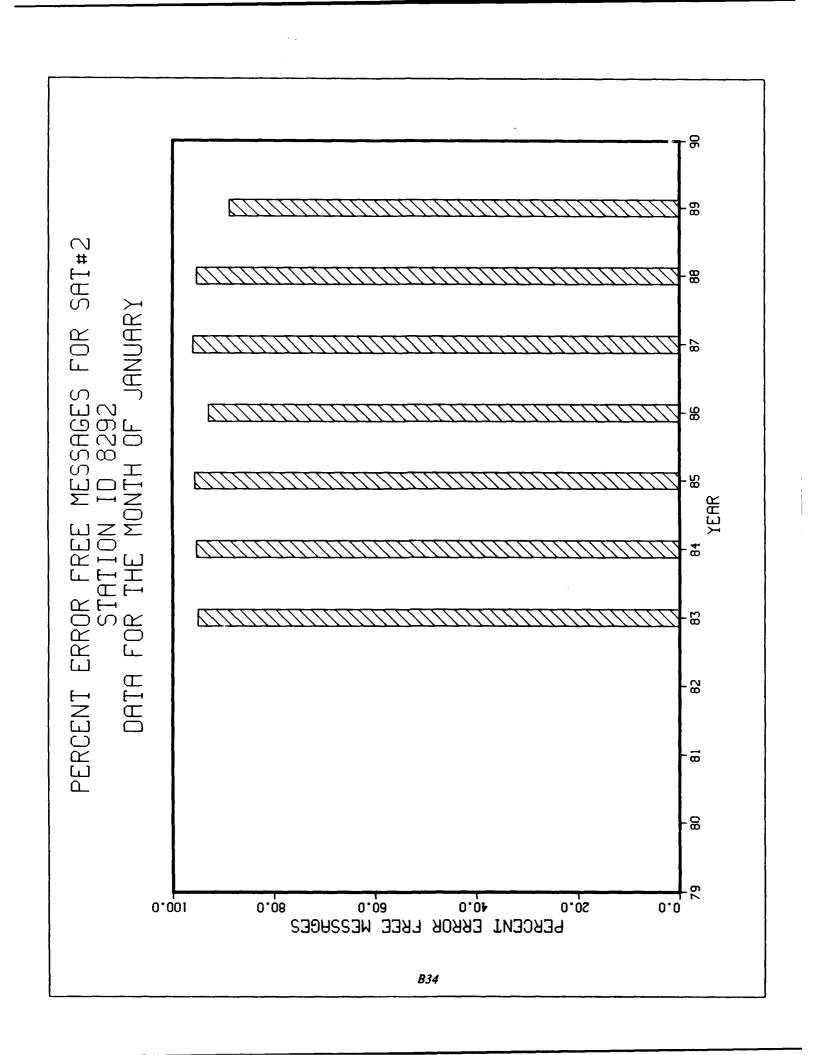


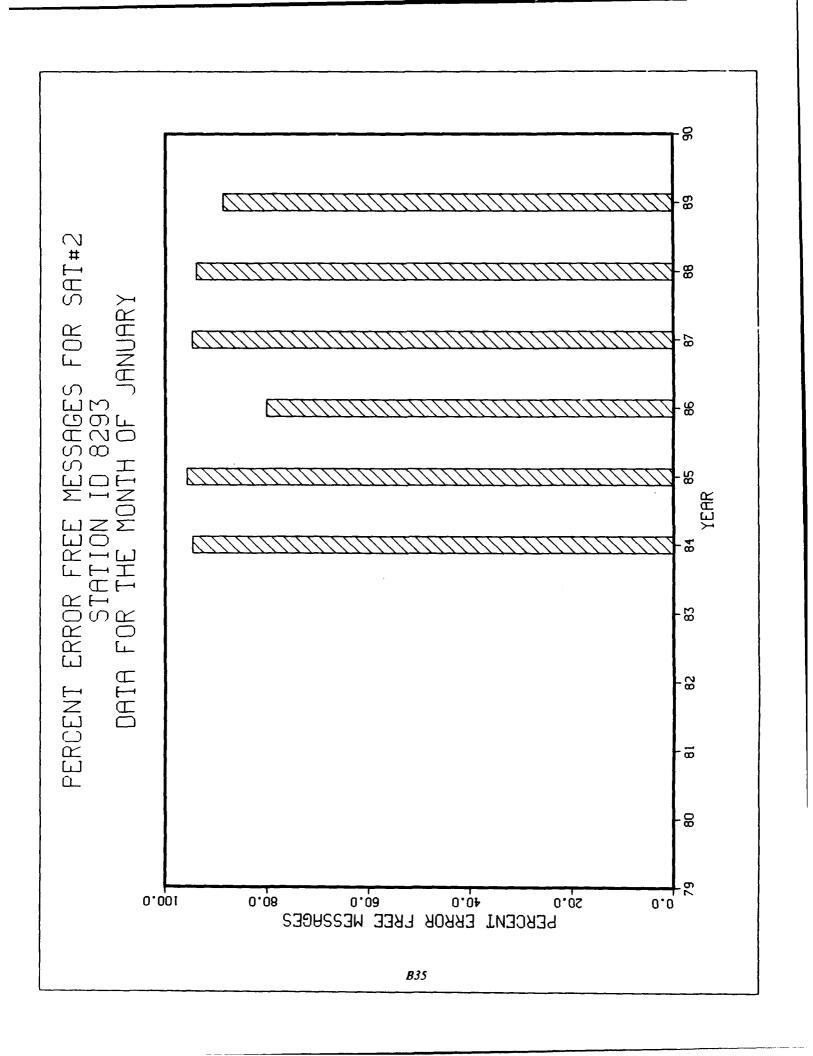


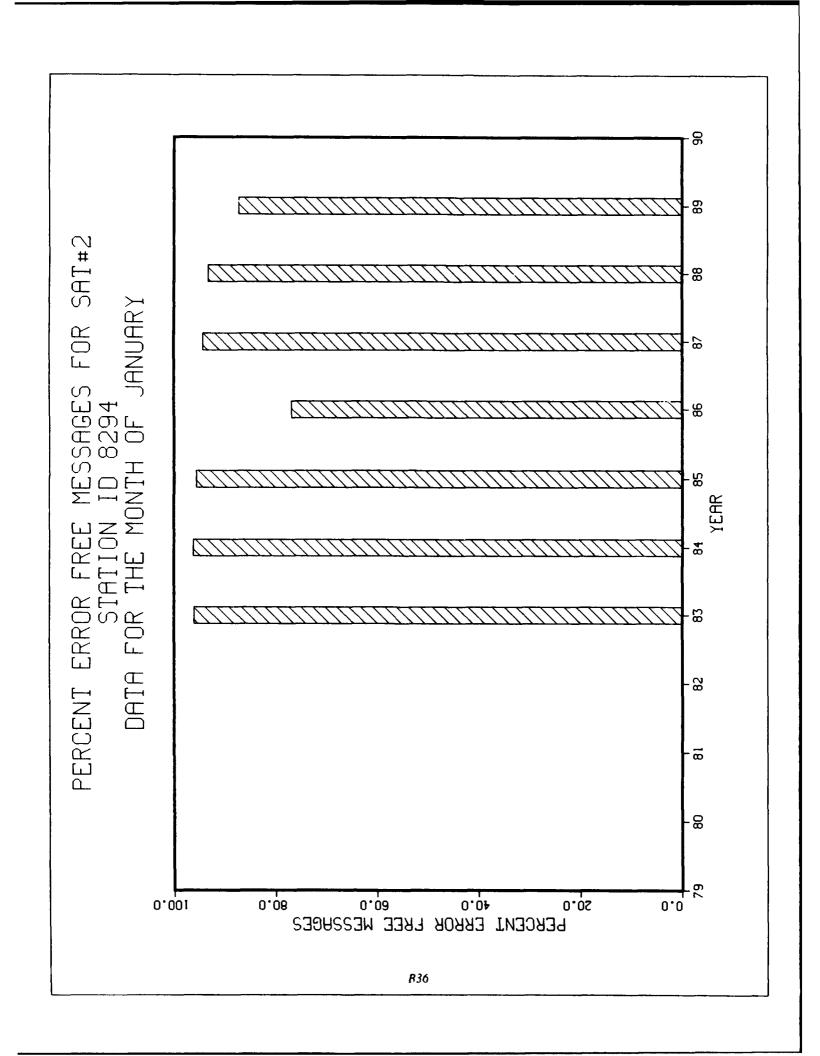


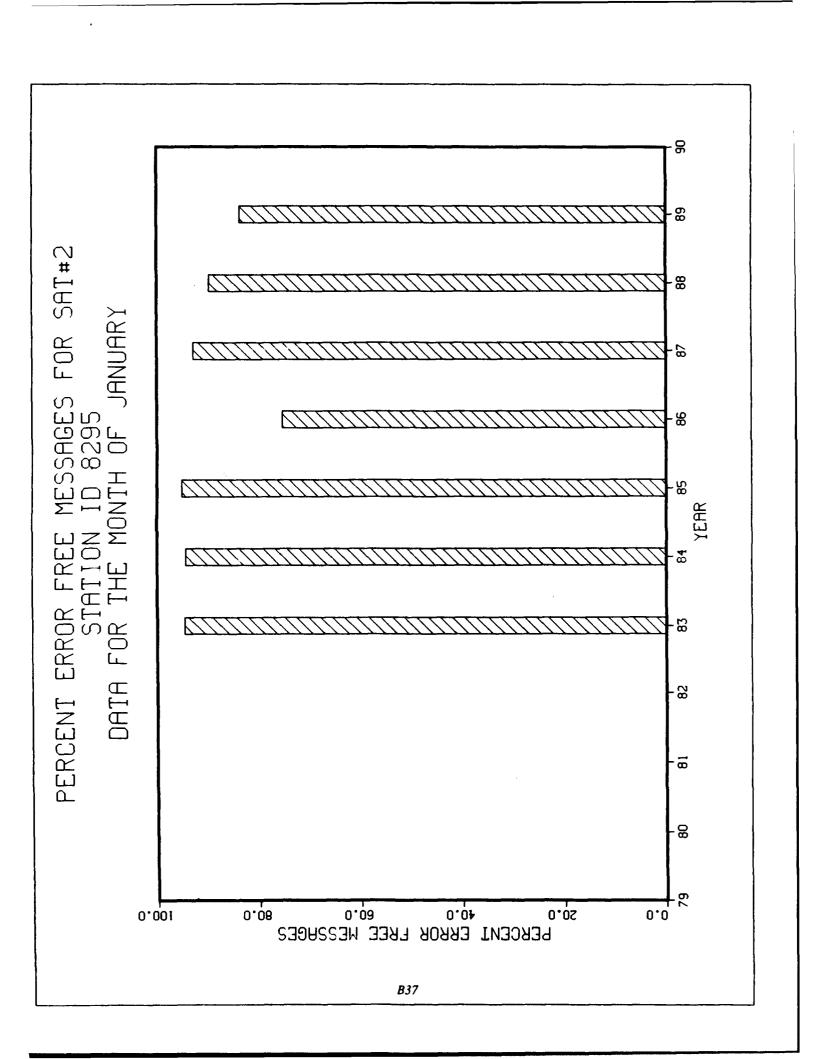


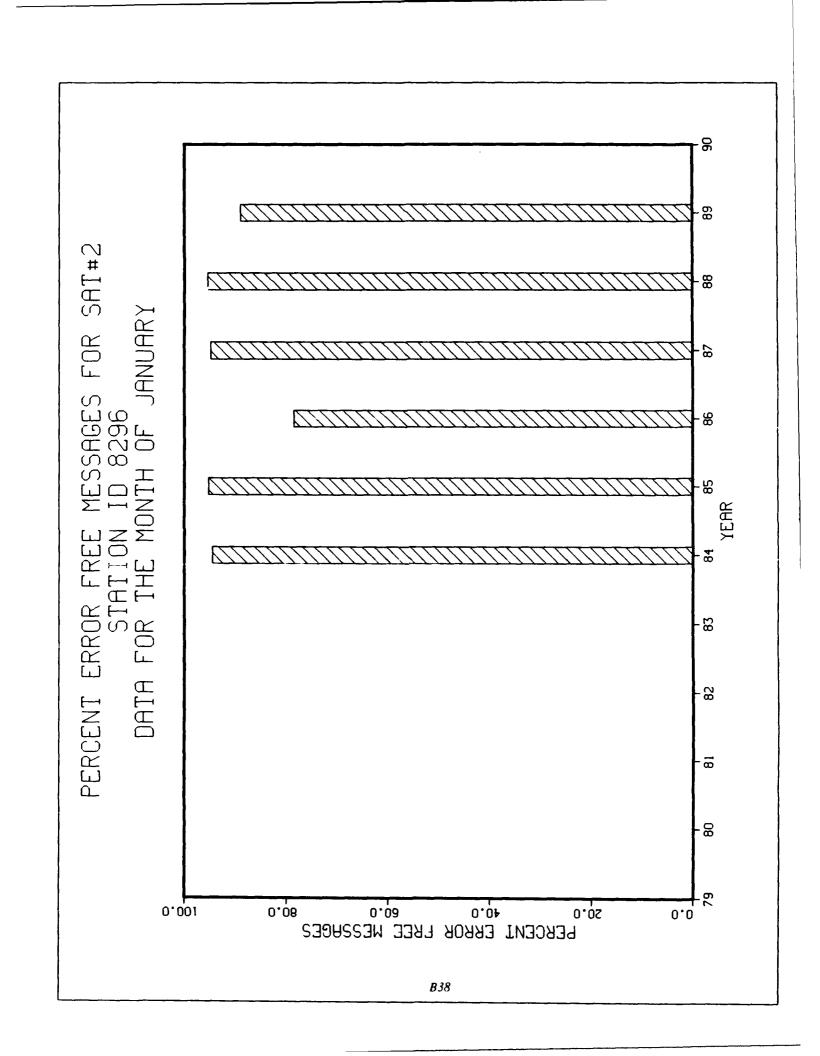


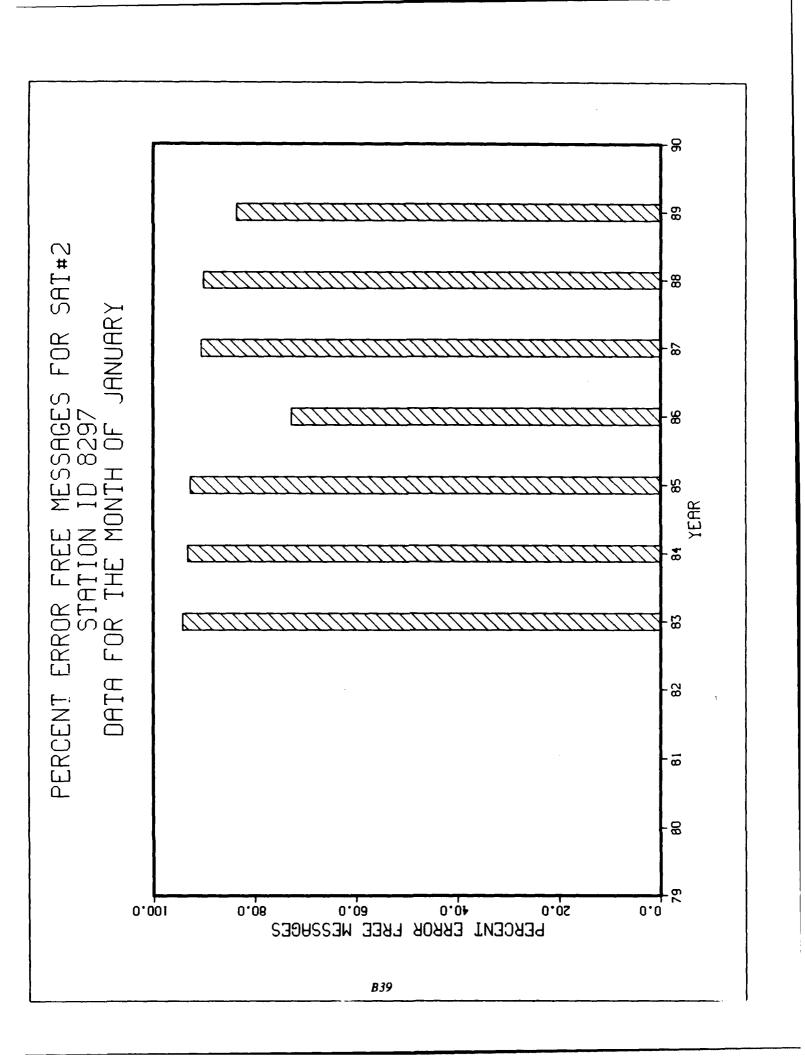


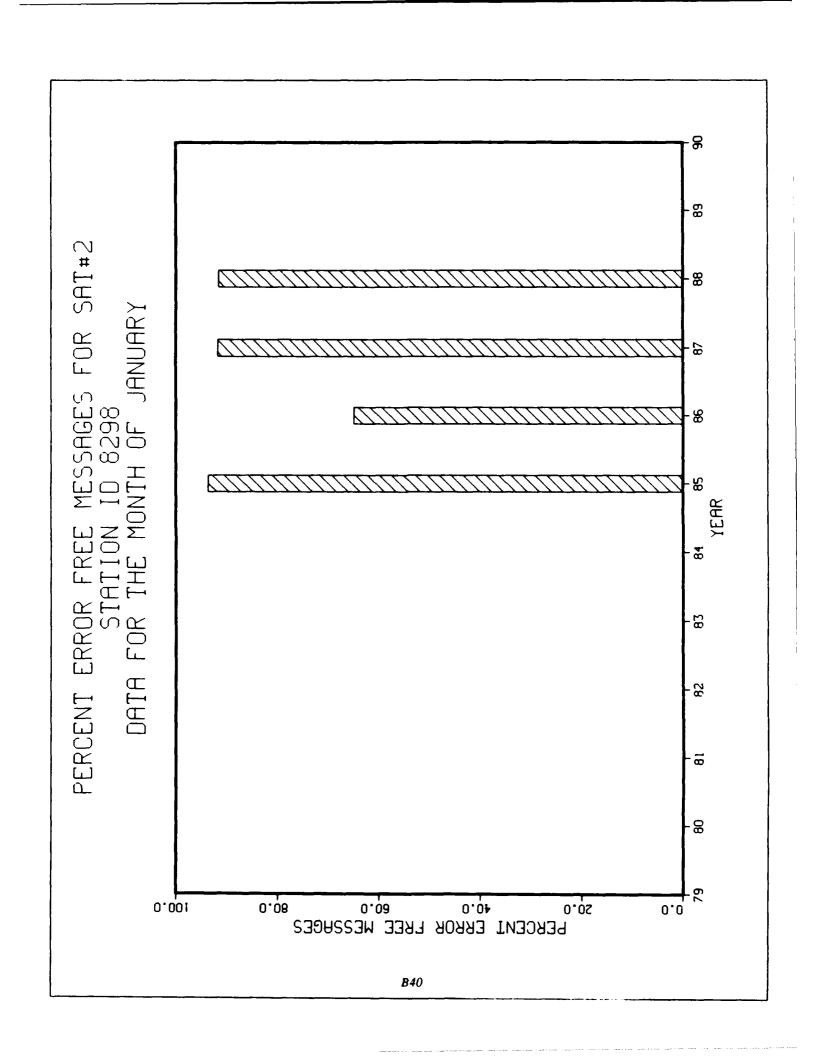


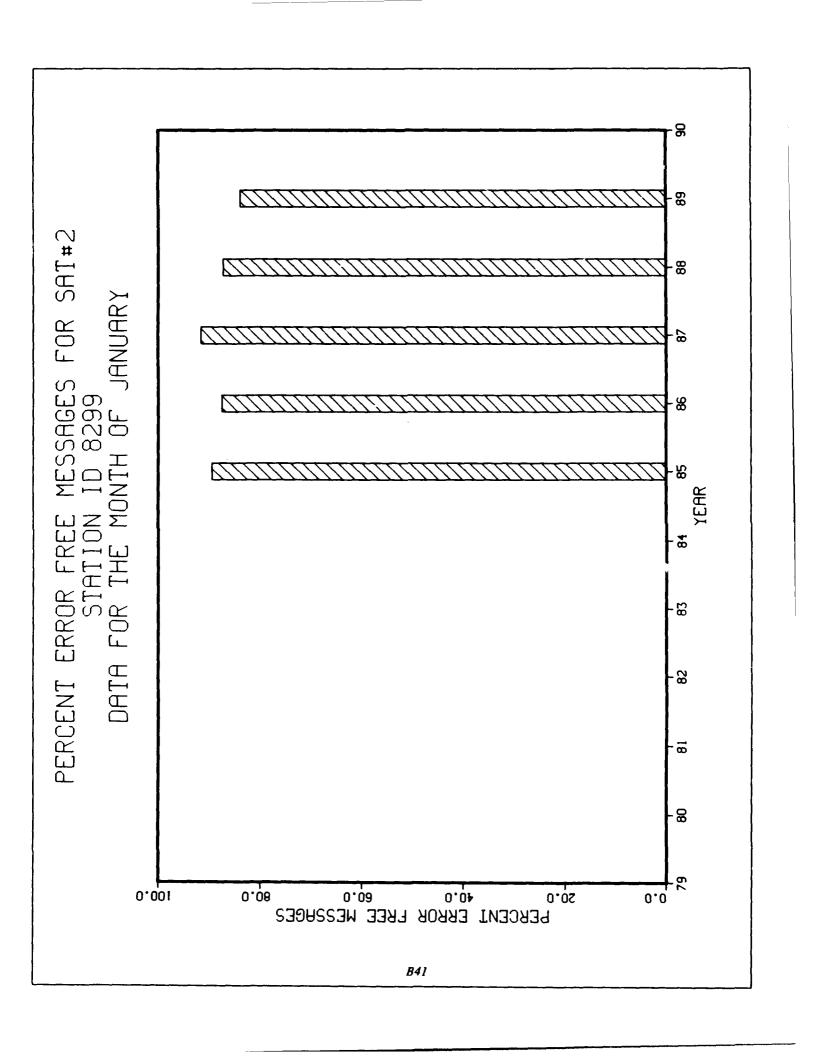


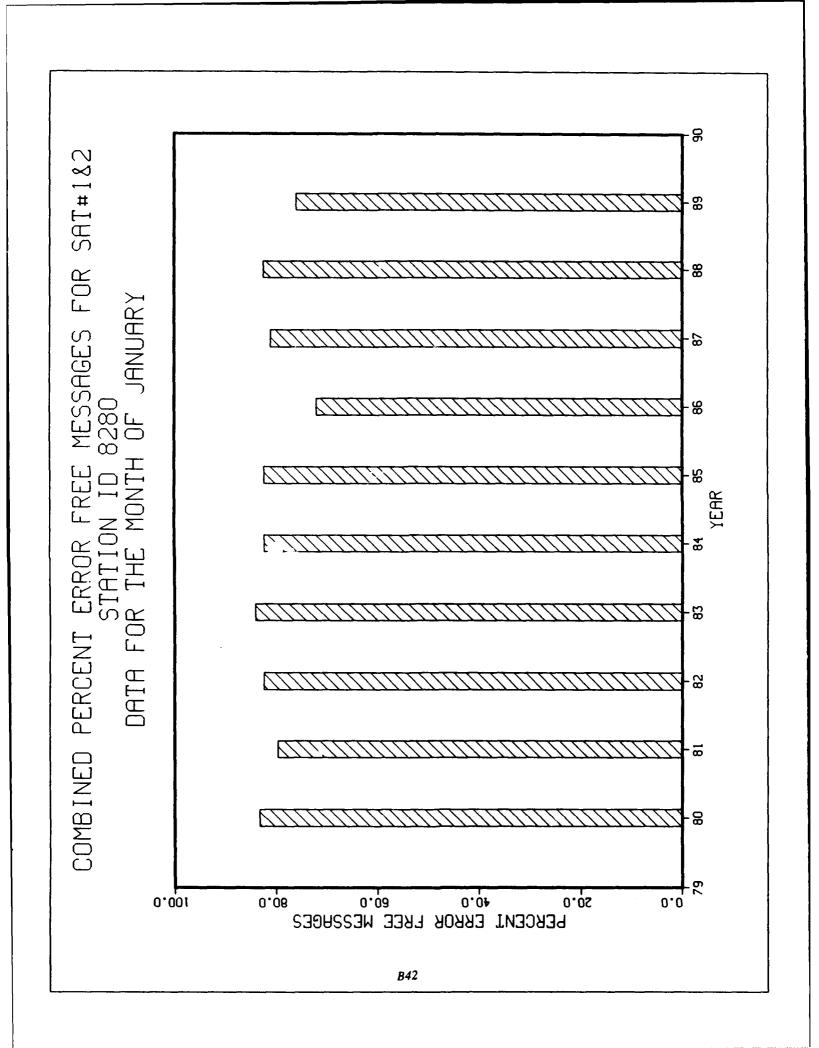


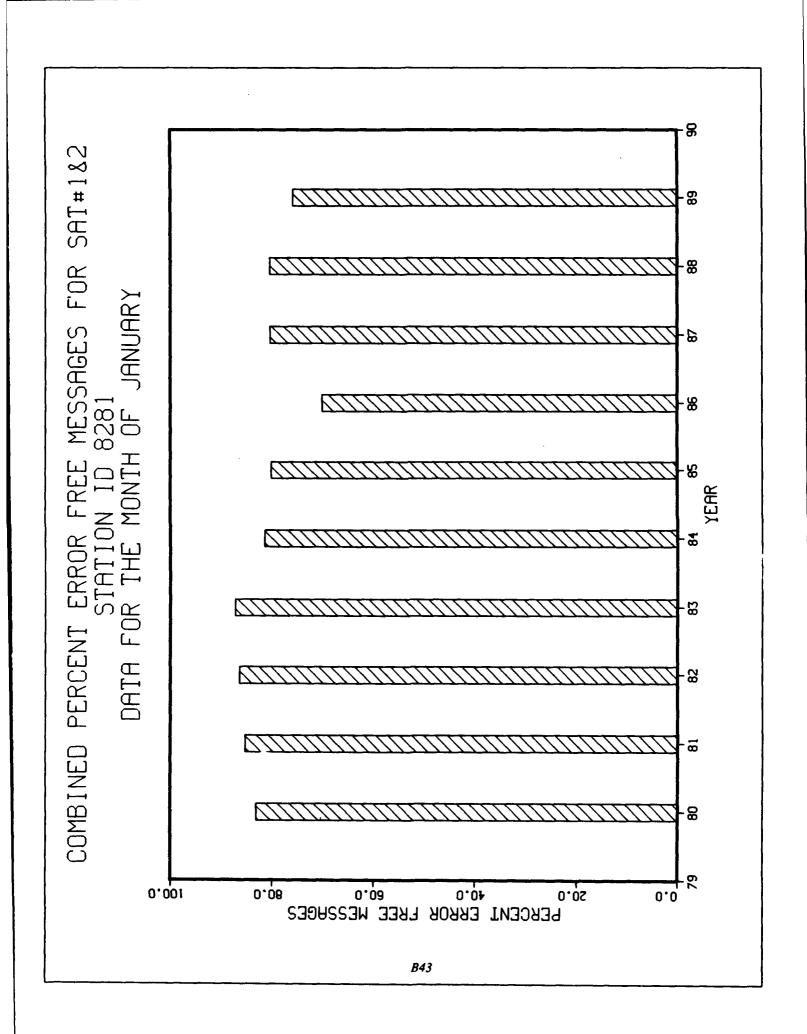


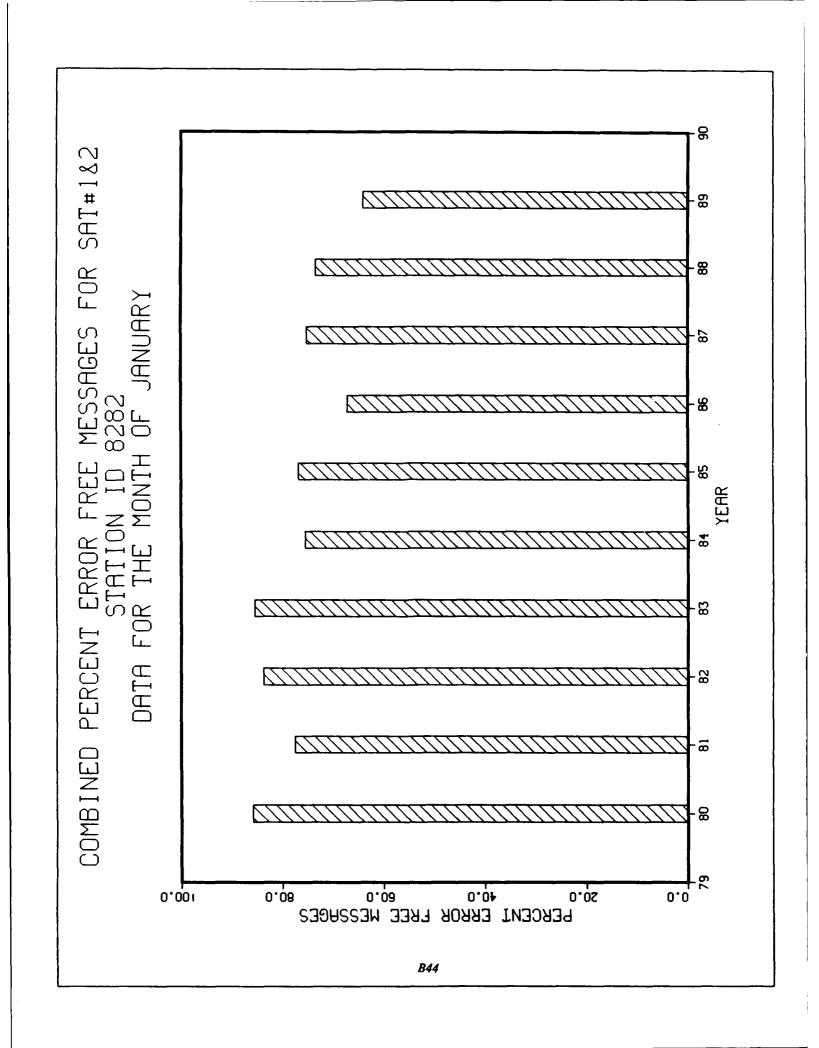


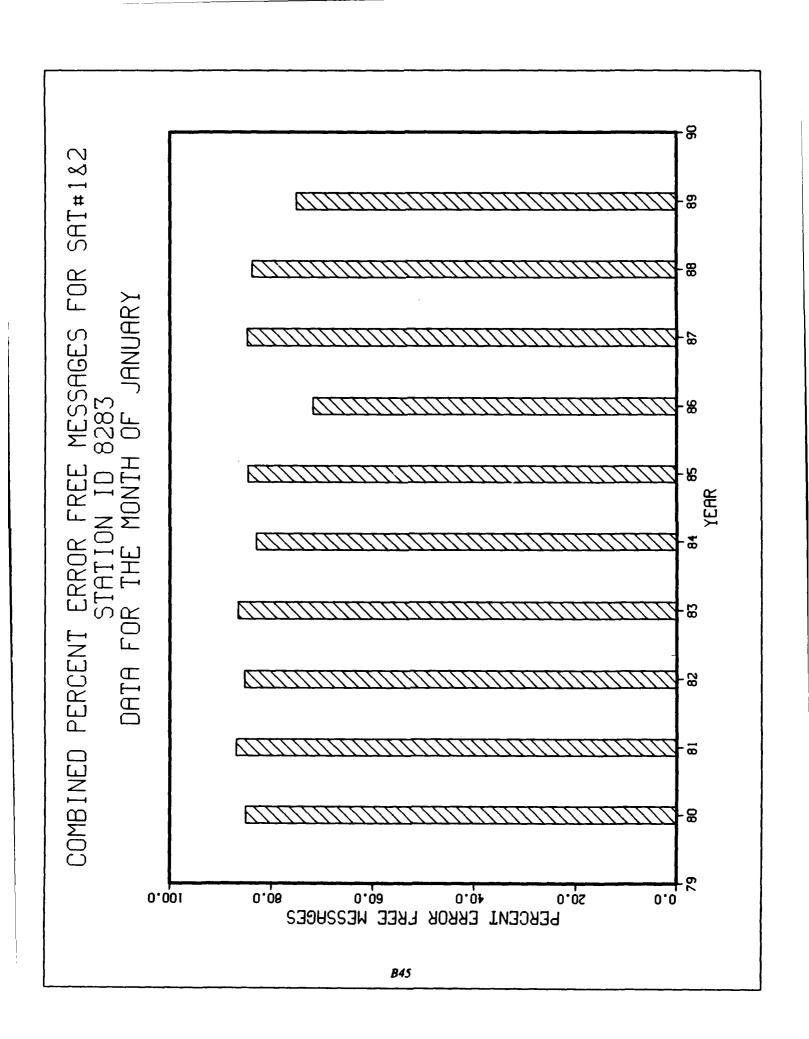


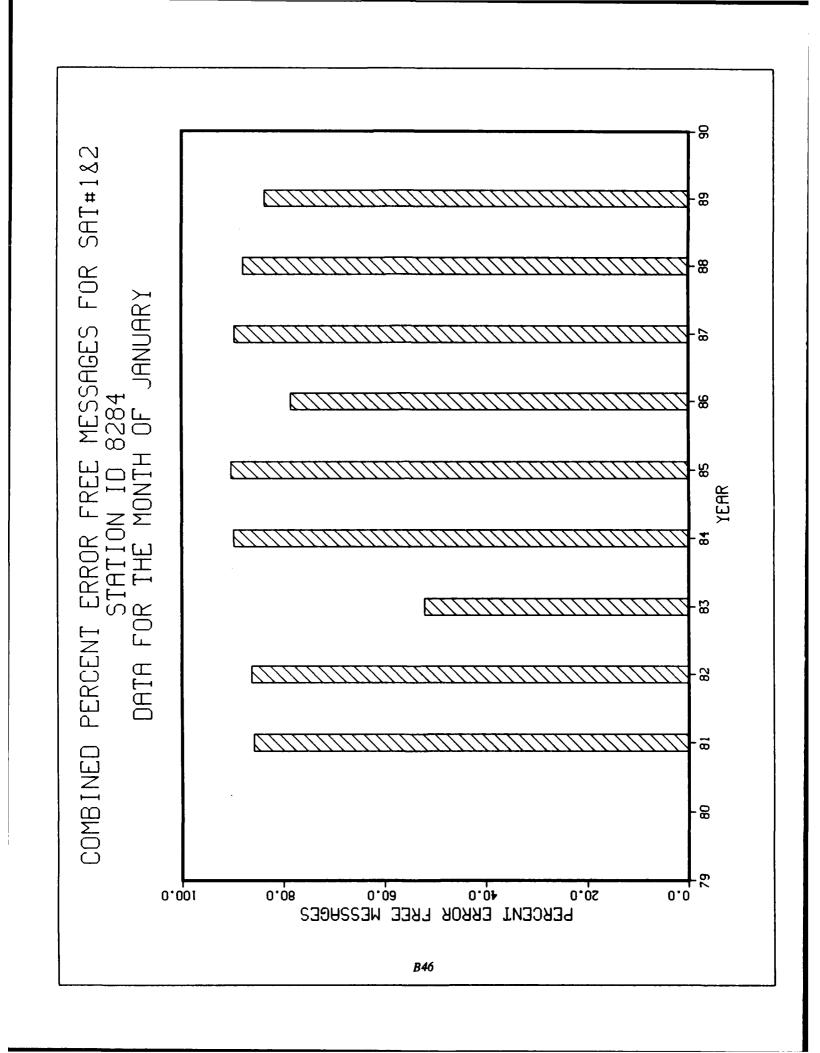


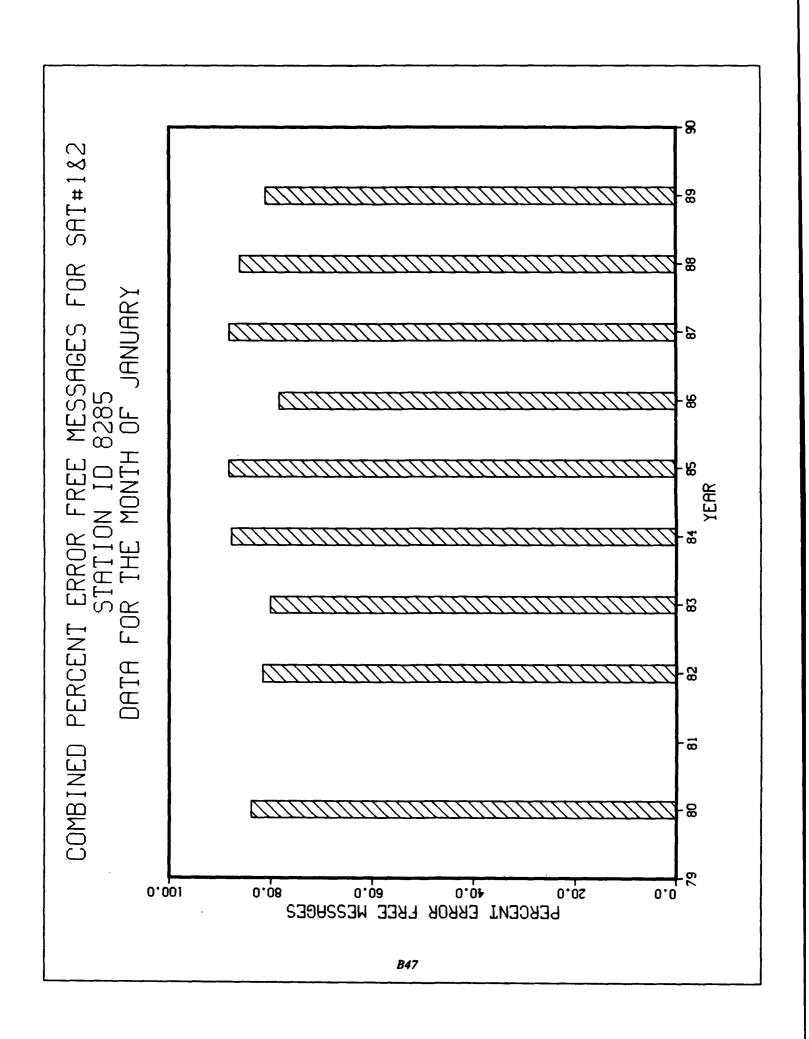


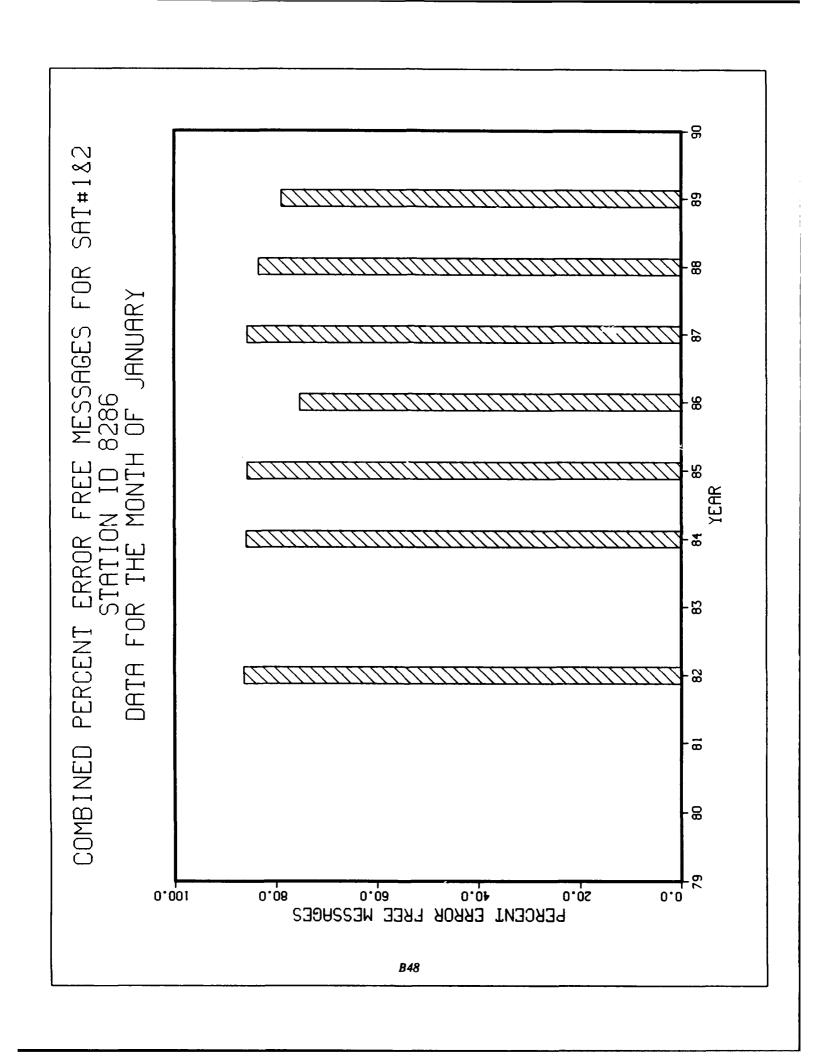


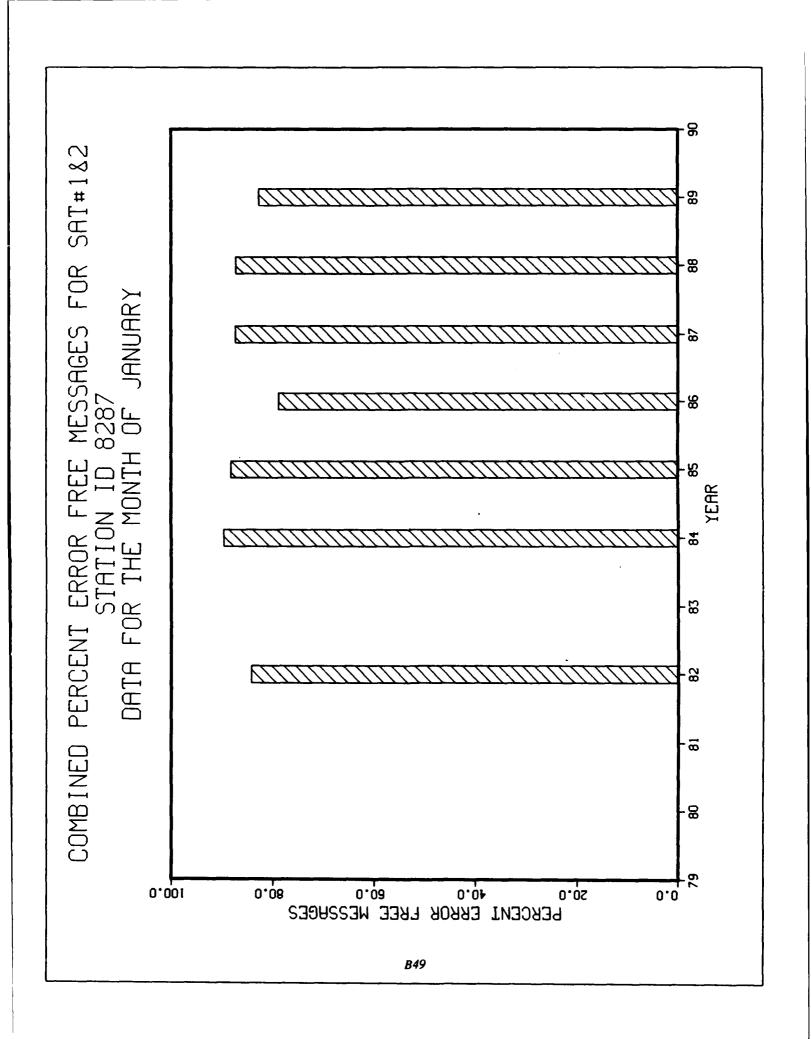


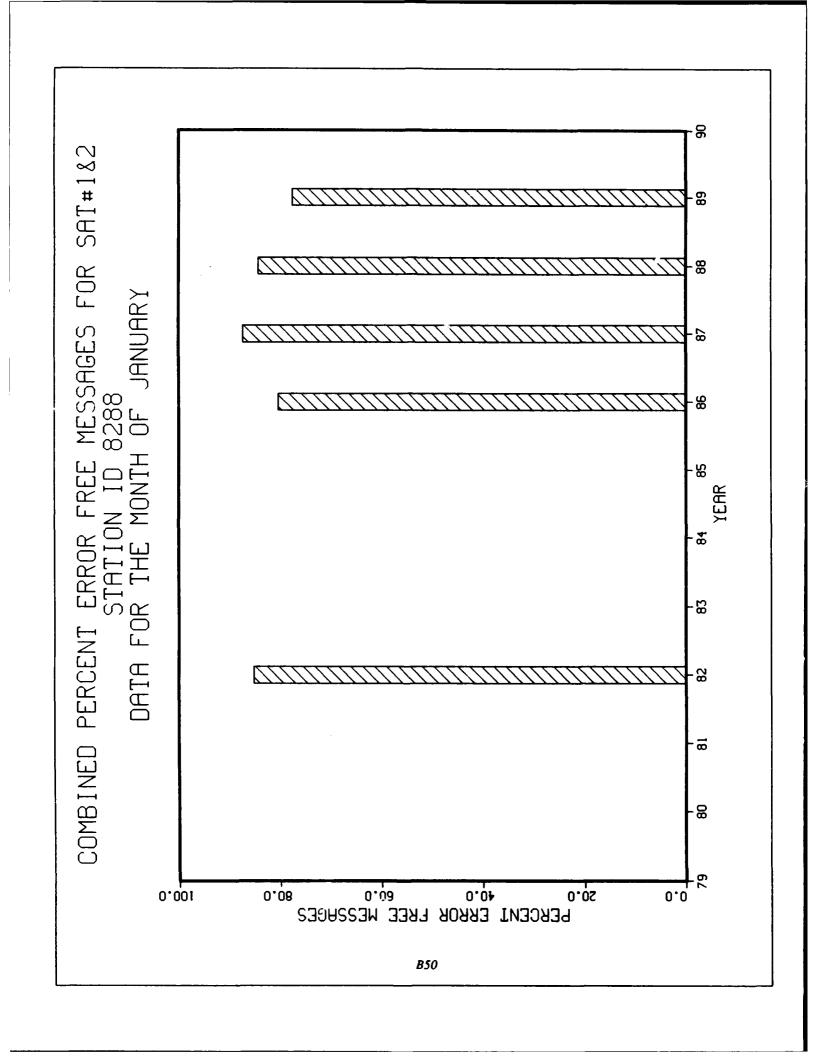


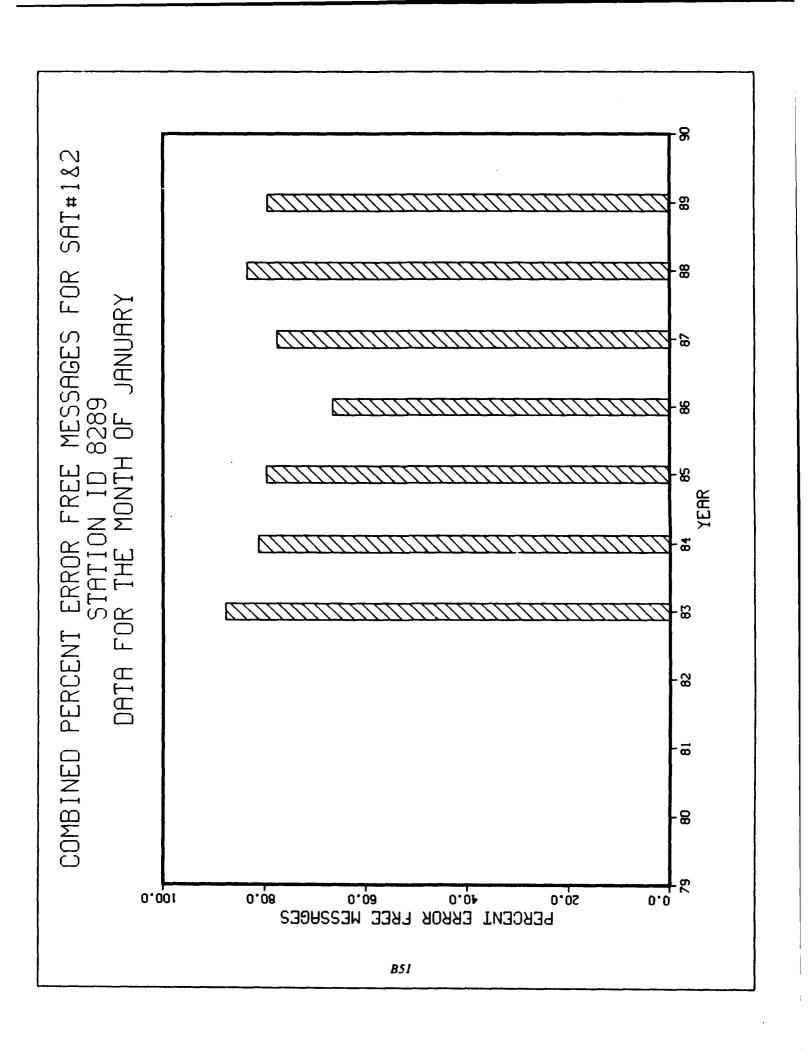


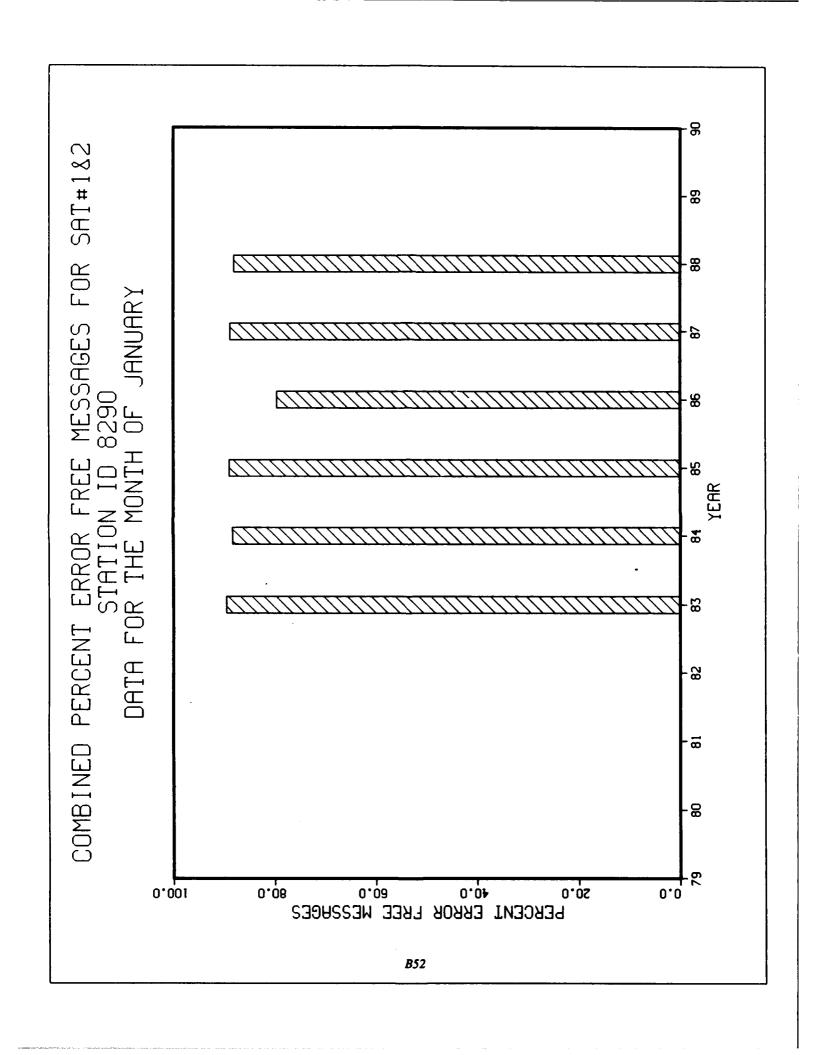


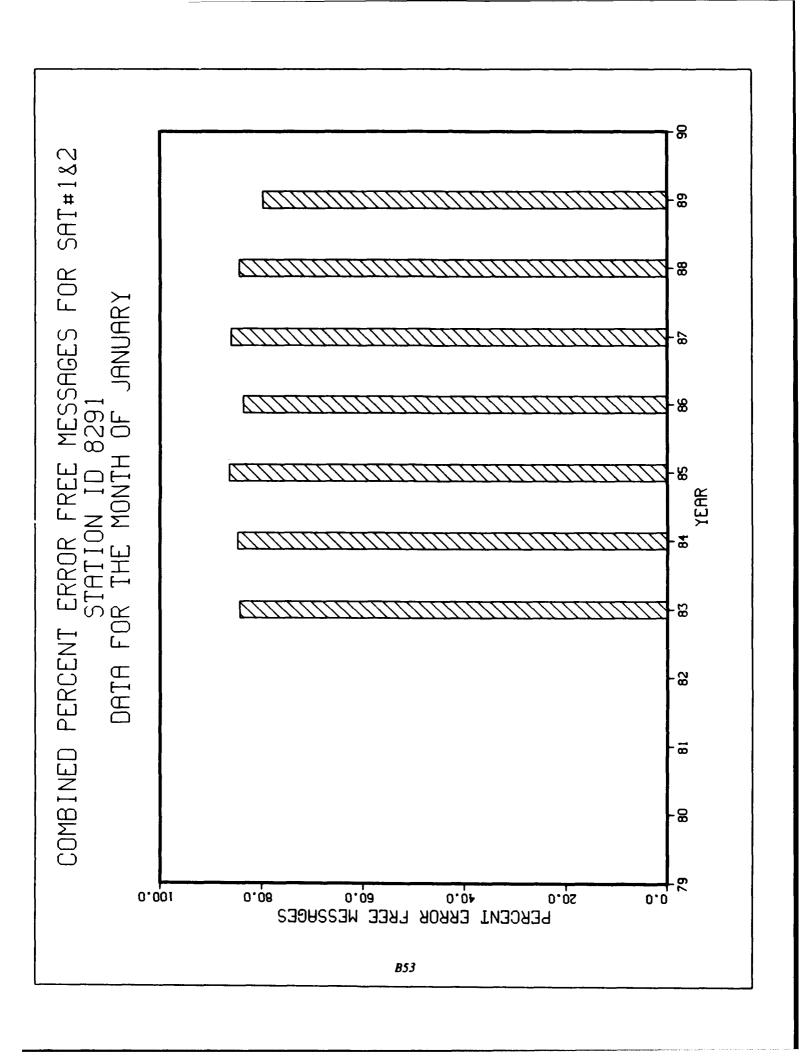


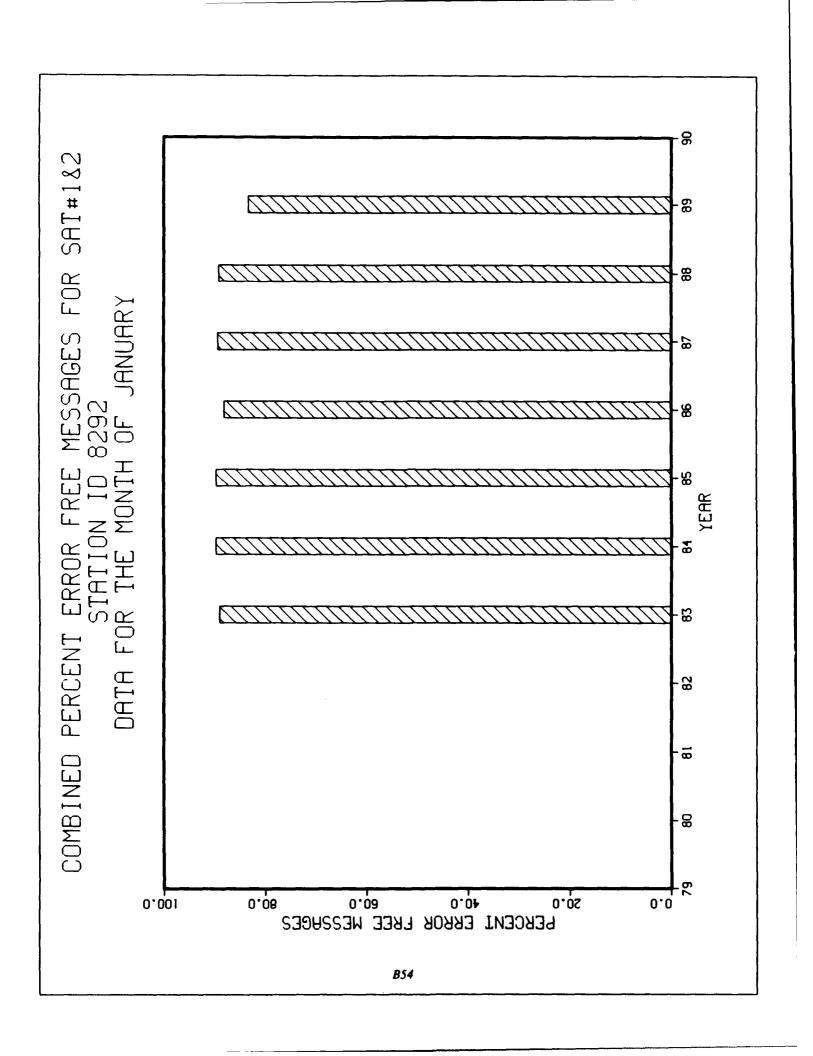


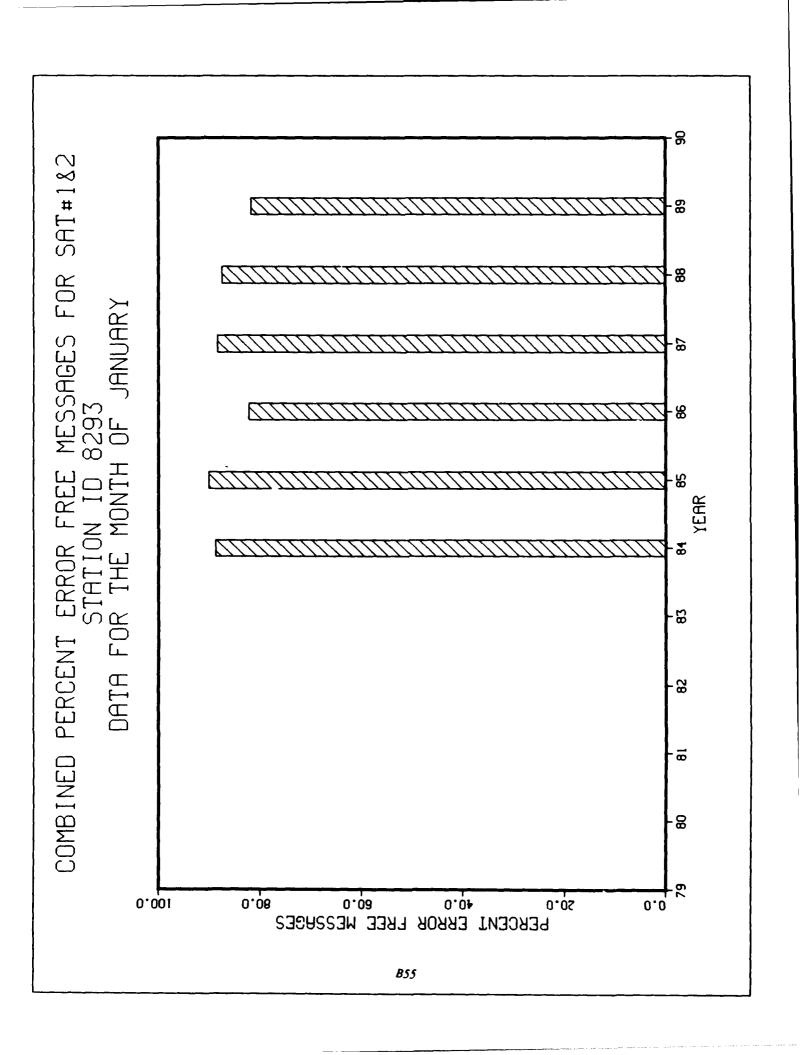


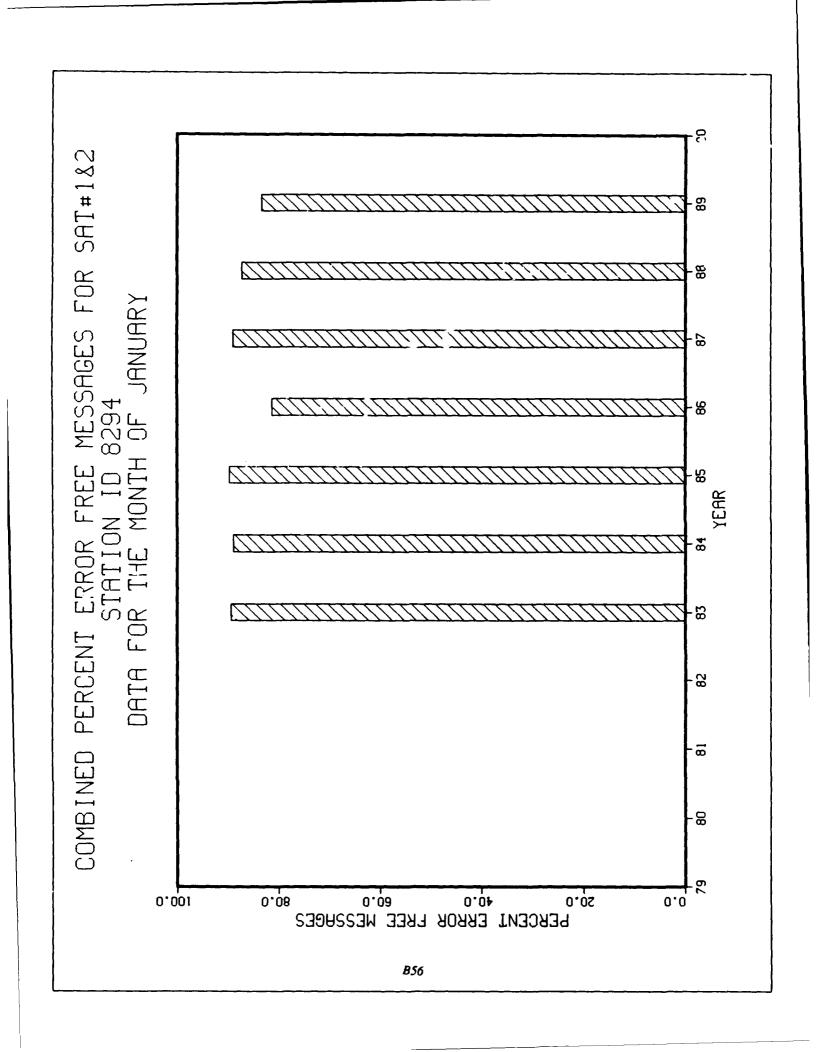


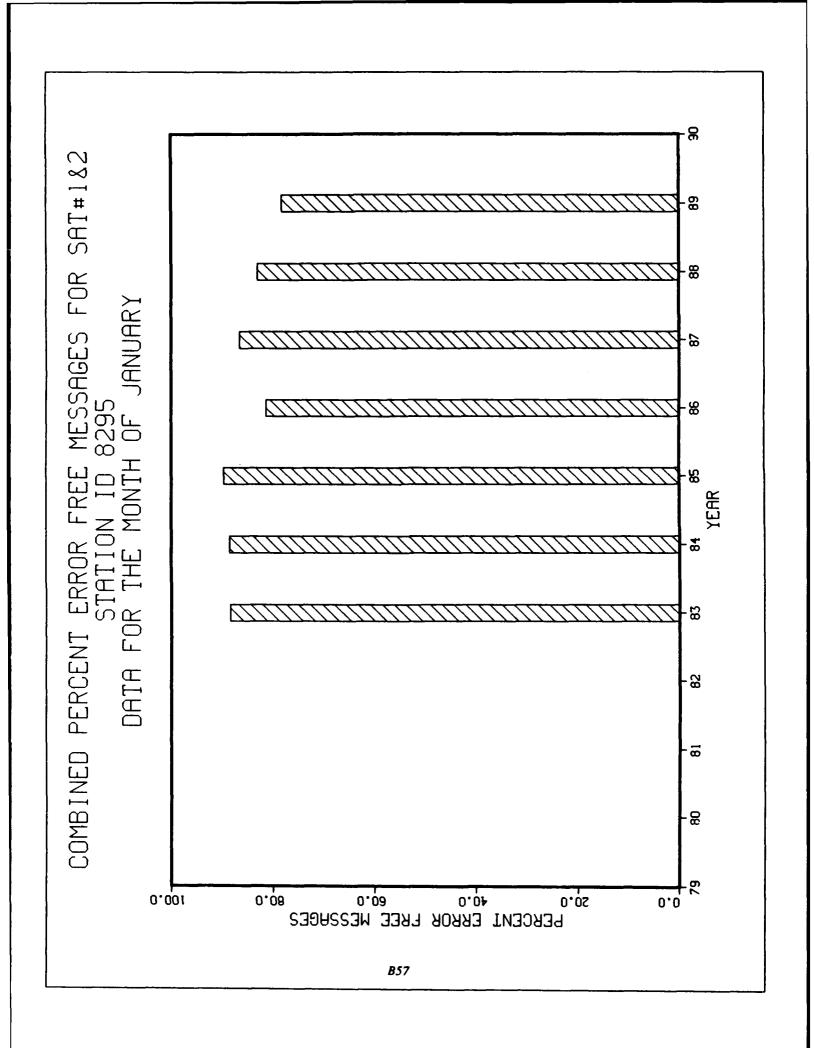


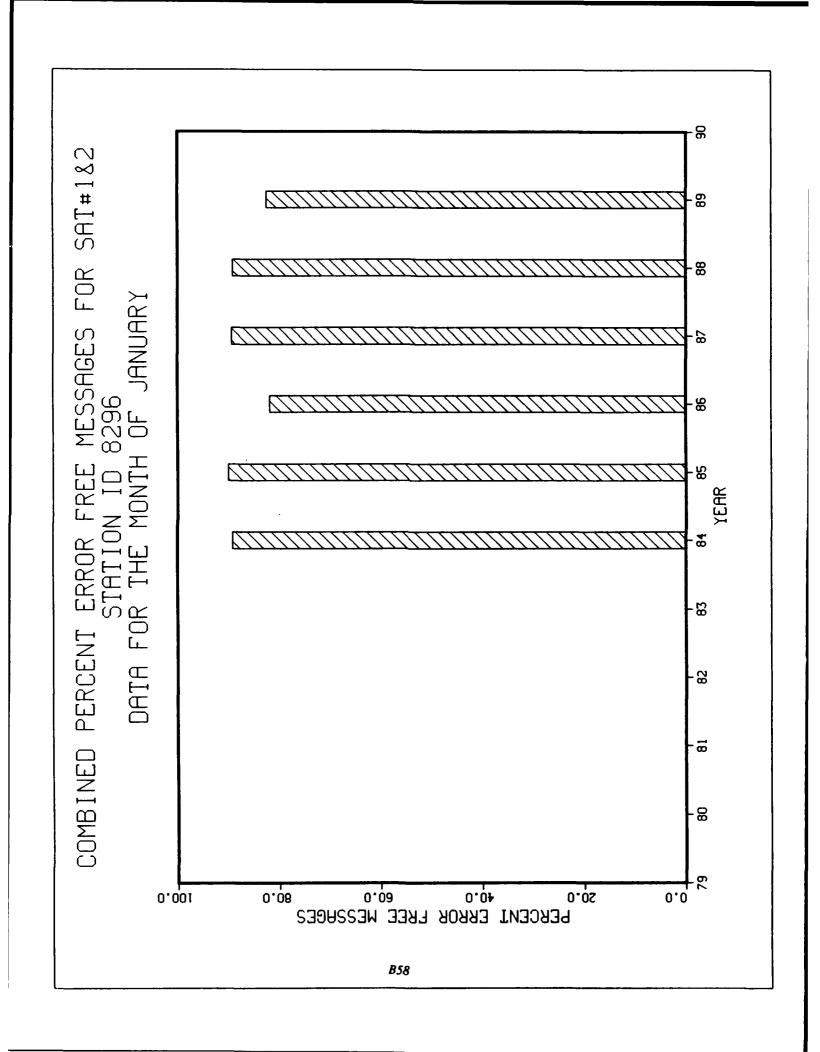


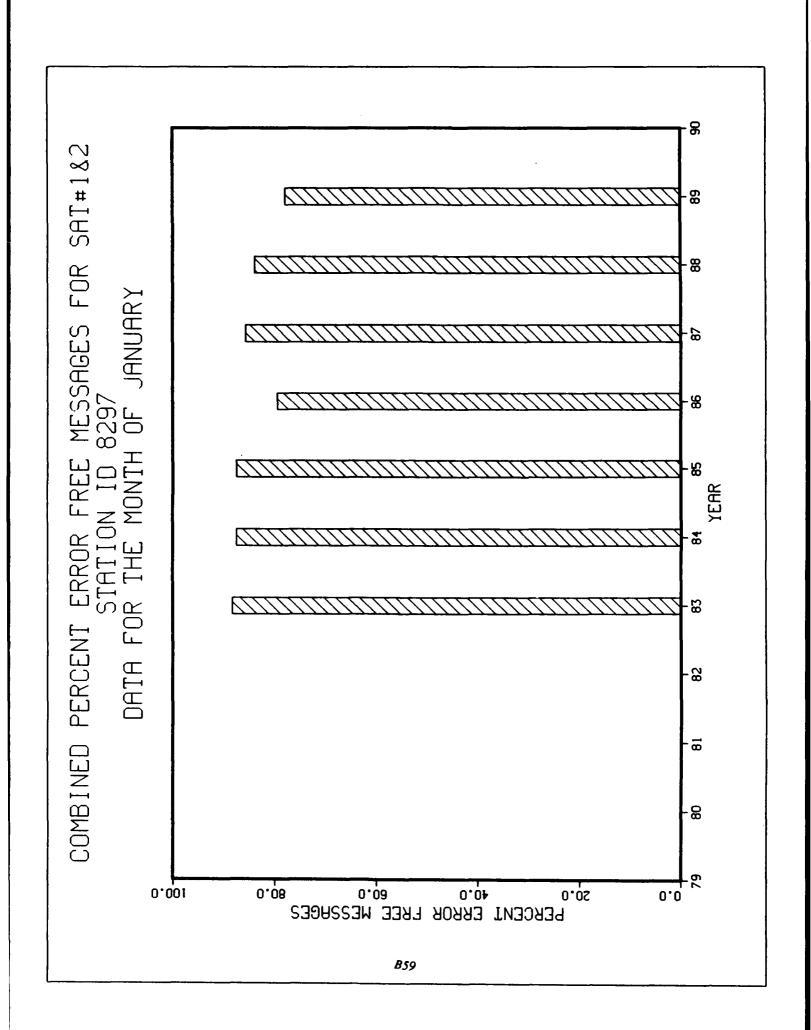


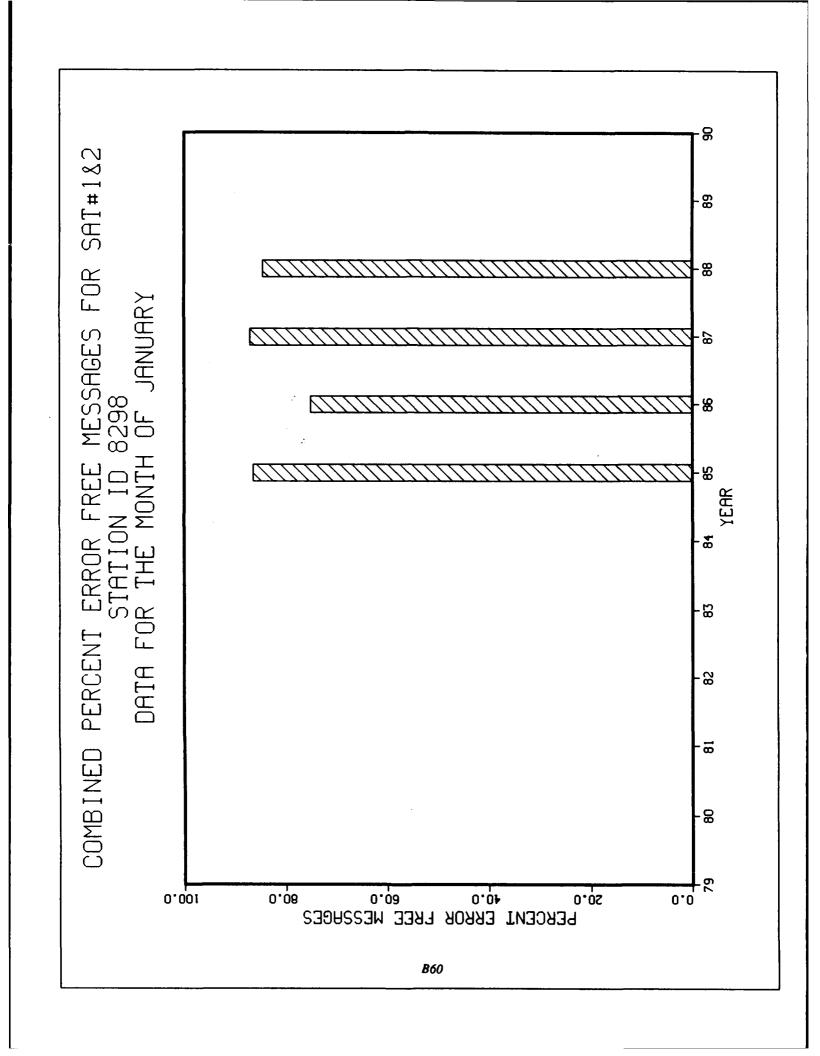


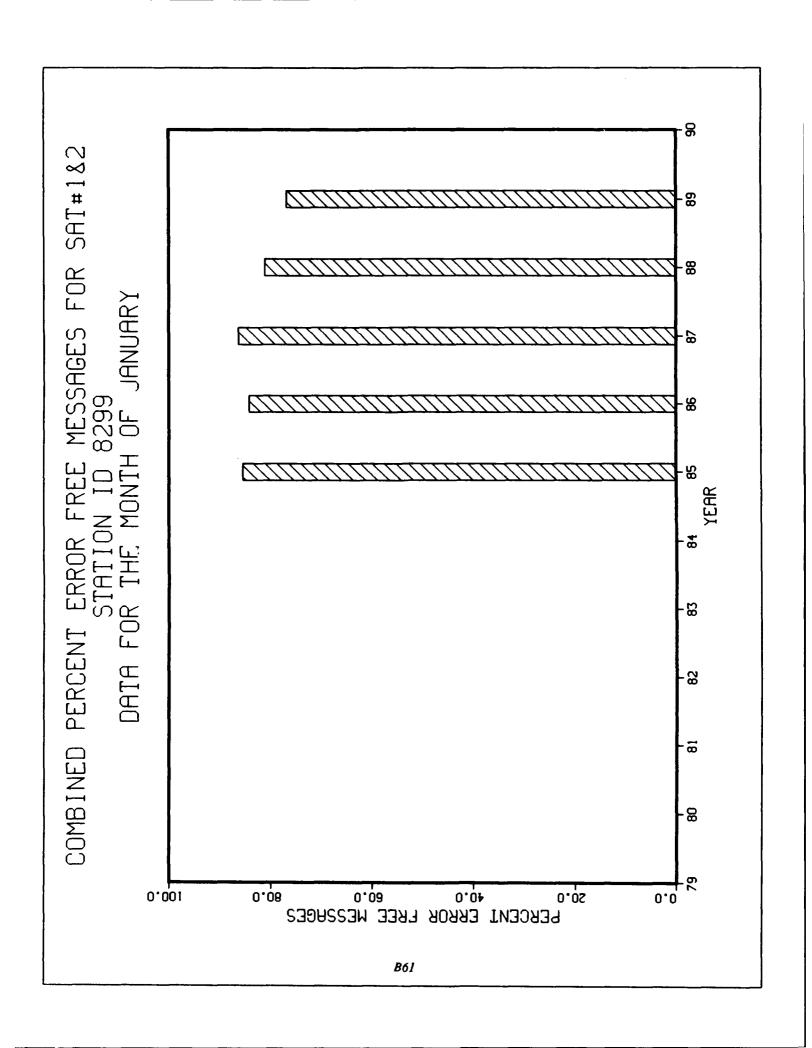


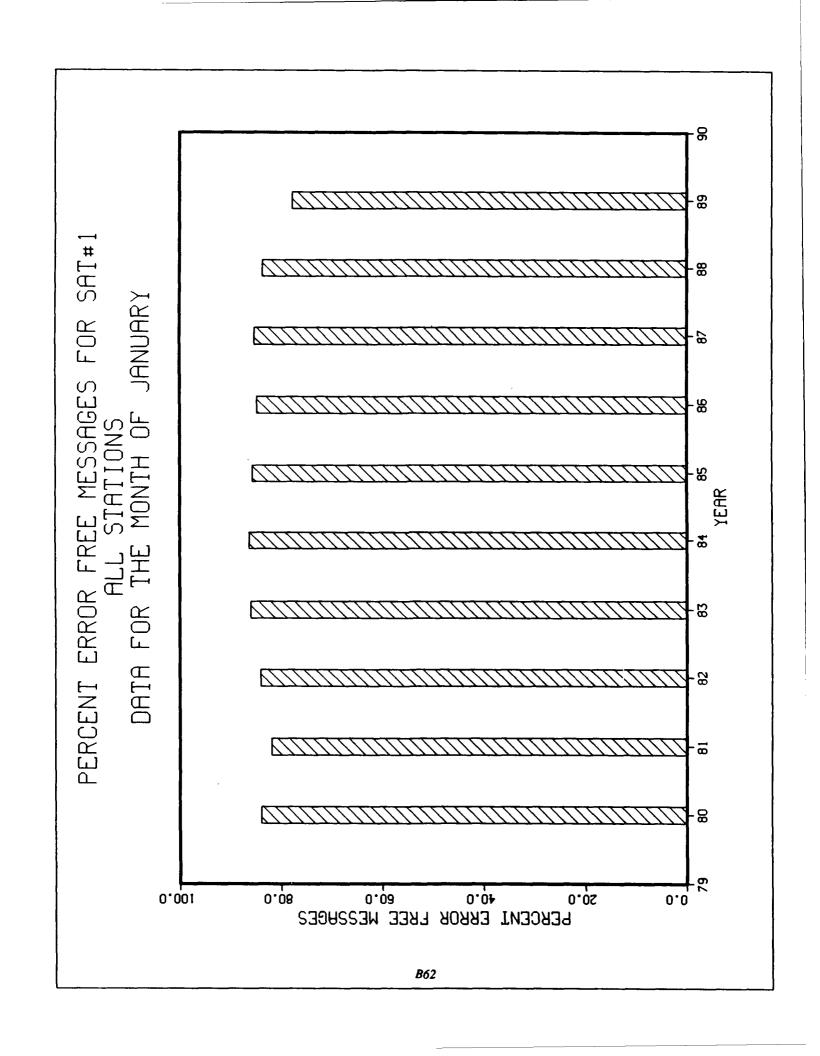


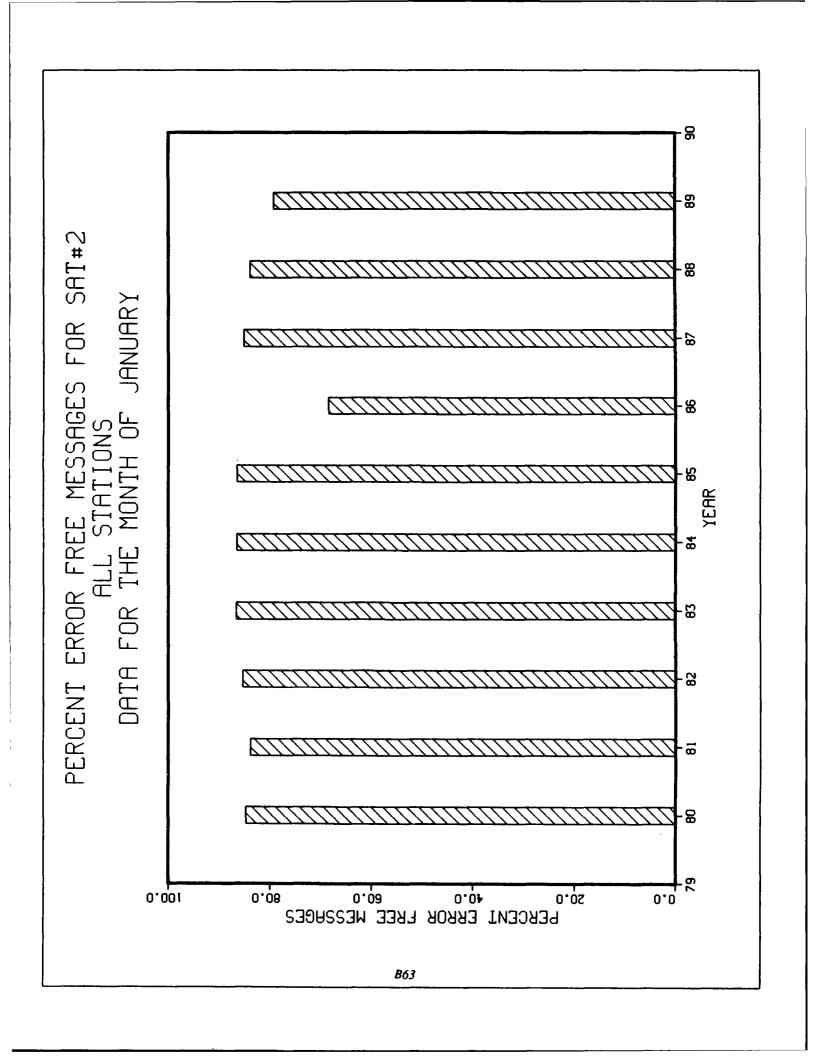


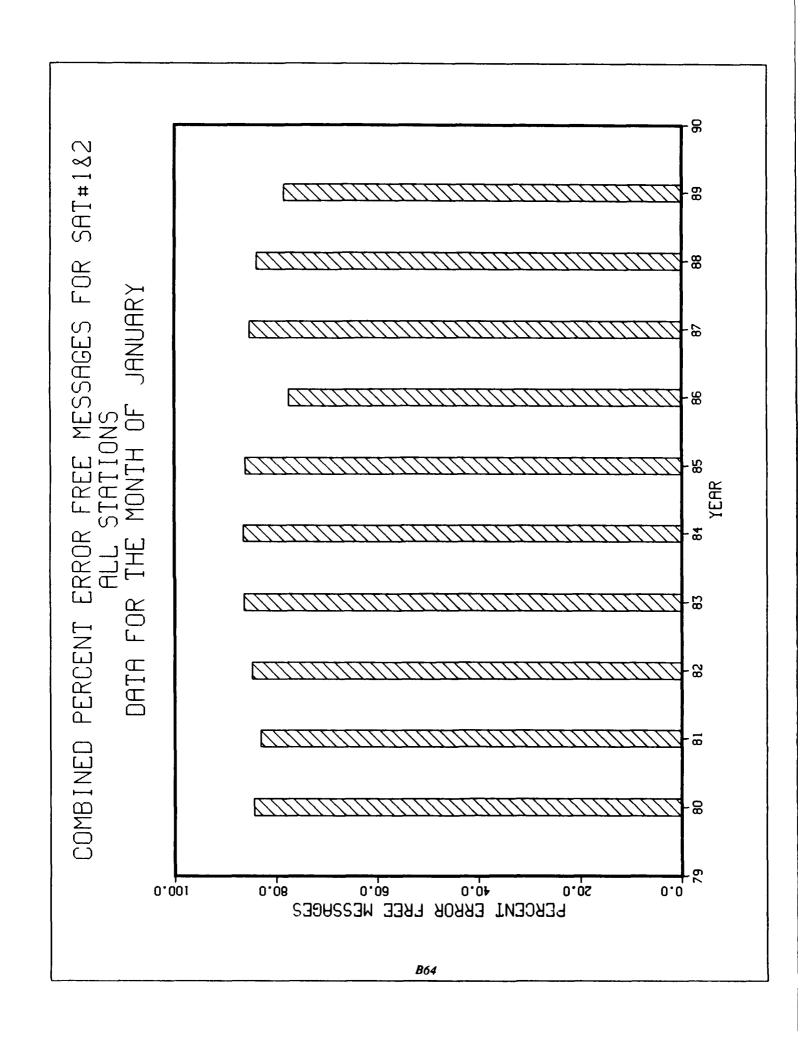






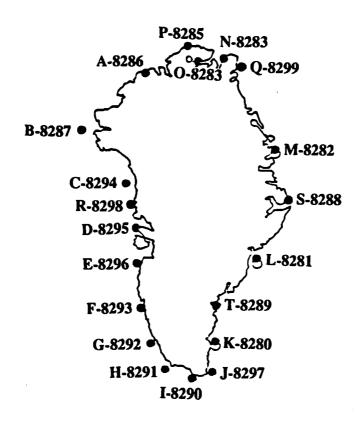




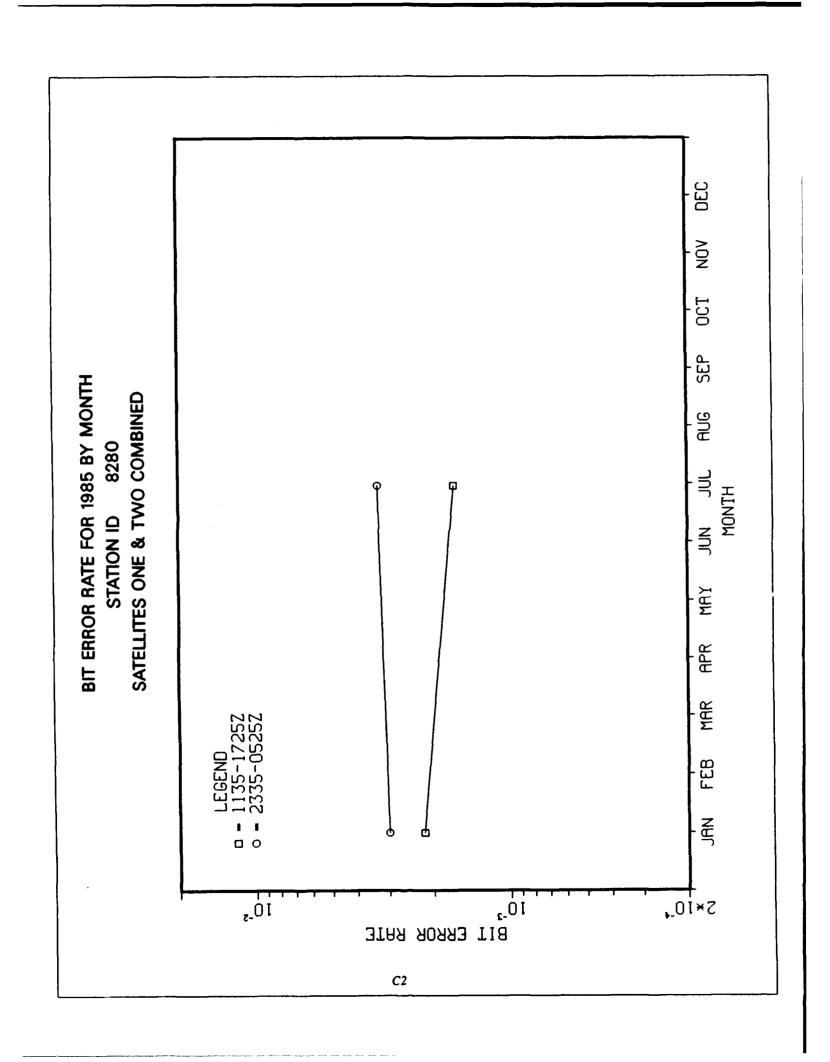


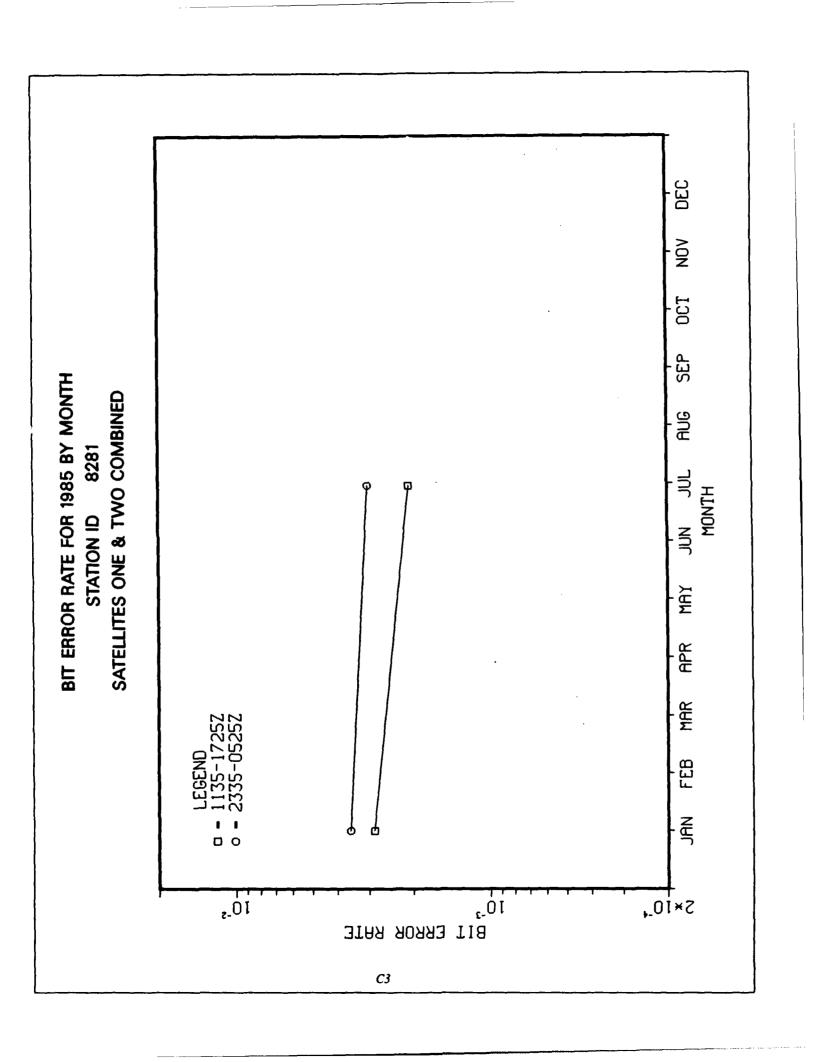
APPENDIX C

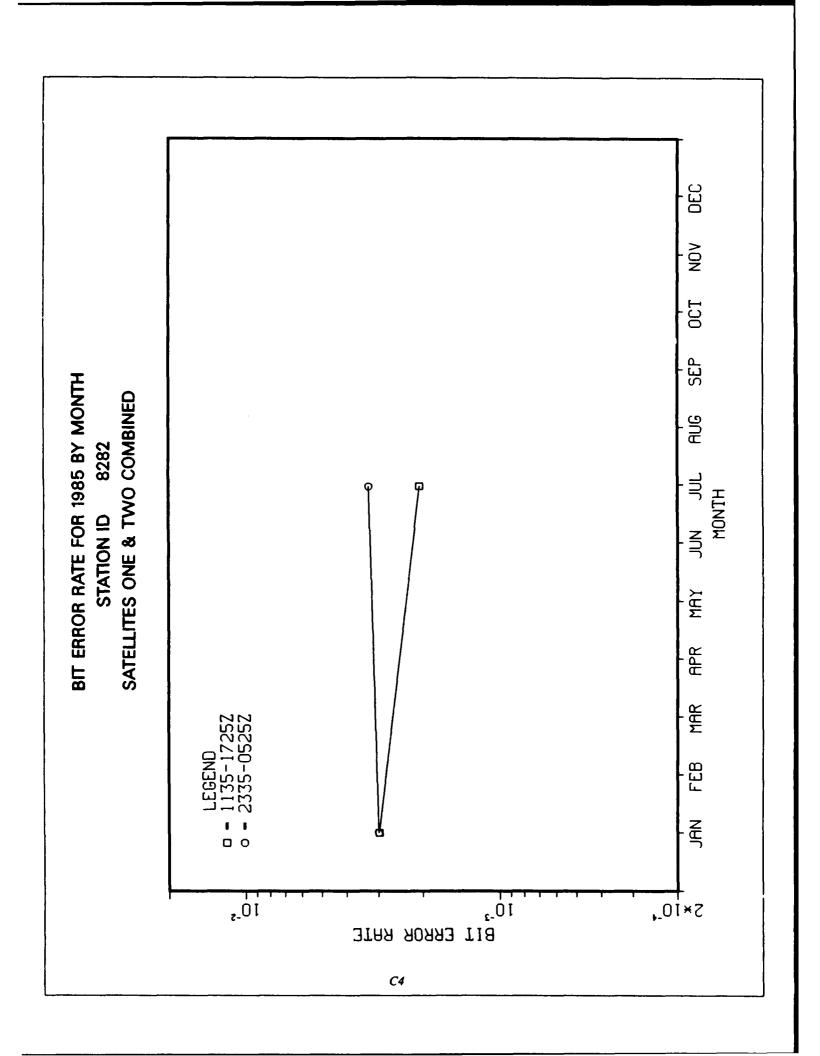
MONTHLY BIT-ERROR-RATE DATA FOR 1985



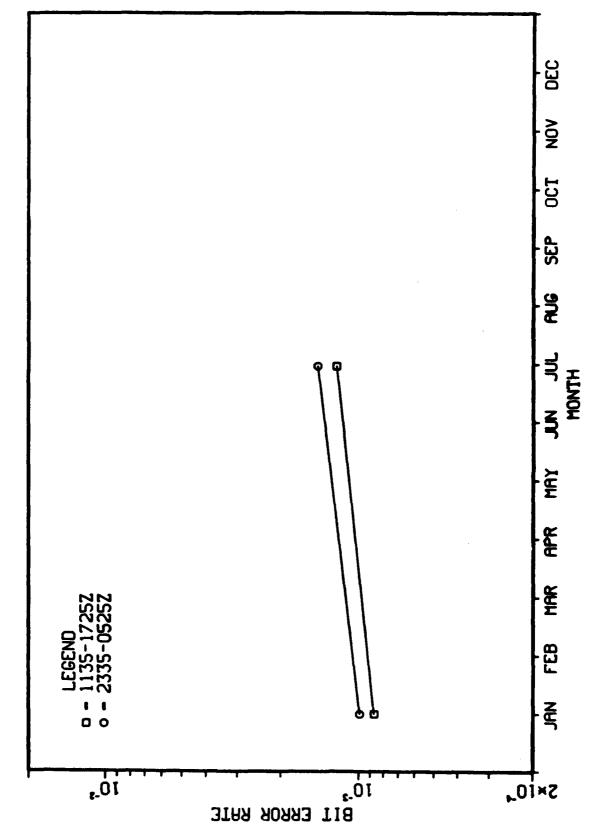
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	Station	Location	ANO-NU	Argos-NR	Established
A-	Hall Land	81*44'N, 59*00'W	04-207	8286	jul.1982
B-	Carey Ser	76*38'N,73*00'W	04-203	6187	Aug. 1979
C-	Edderfugleser	74°02'N, 57°49'W	04-208	8294	Sep.1981
D-	Mugssuaq	70*41 'H, 54*37 'W	04-214	8295	Aug.1982
E-	Agto	67*47'H,53*58'W	04-228	8296	Aug.1983
F-	Siorelik	65*01'N,52*33'W	04-242	8293	Jun.1983
G-	Frd.håbs Isblink	62*34'N, 50*25'W	04-253	8292	Jun.1982
H-	Munerssuit	60-46'H,48-25'W	04-266	8271	Jun.1981
1 -	Anglasoq	59*59'N,45*12'W	04-285	8290	Jun.1981
J-	Prins Chr.sund	60°02'N,43°07'W	04-390	8297	Okt.1982
K-	Ikermierssuk	61°56'N, 42°04'W	04-381	8280	Aug.1978
L-	Aputiteq	67°47'N, 32°18'W	04-351	8281	Aug. 1978
M -	Daneborg	74*18'H, 20*13'W	04-330	6262	Aug. 1976
N-	Station Mord	81°36'N,16°40'W	04-312	8283	Sep.1979
0-	Kap Harald Moltke	82*09'N, 29*53'W	04-305	8284	Aug.1979
P-	Kap Morris Jessup	83*40'N, 33*22'W	04-301	8285	Jul.1979
S-	Kap Tobin	70°25'N,21°58'W	04-340	8288	Aug.1985
T-	Ikerait	64*47'N,40*18'W	04-373	8289	Okt.1986
Q-	Krøyers Holme	80°41'H, 13°55'W	04-313	6299	Jul.1984
R-	Upernavik	72°47'W, 56°10'W	04-209	6298	Aug.1984
	! !	! 			i 1

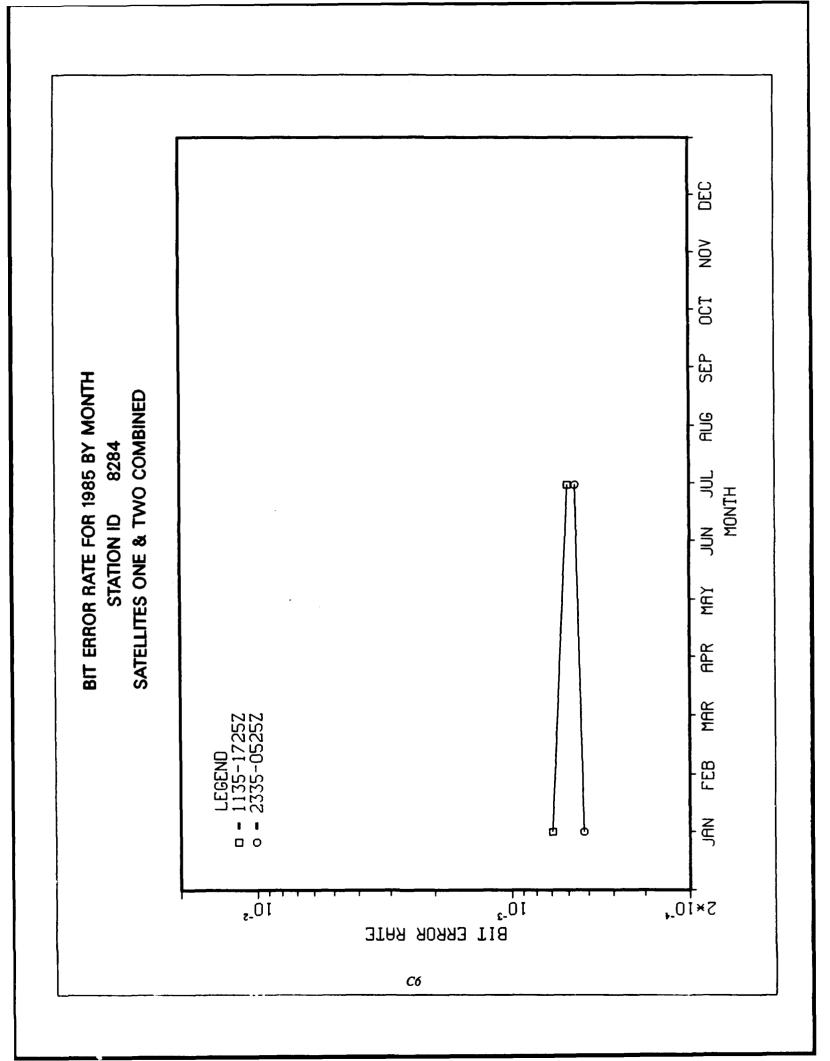


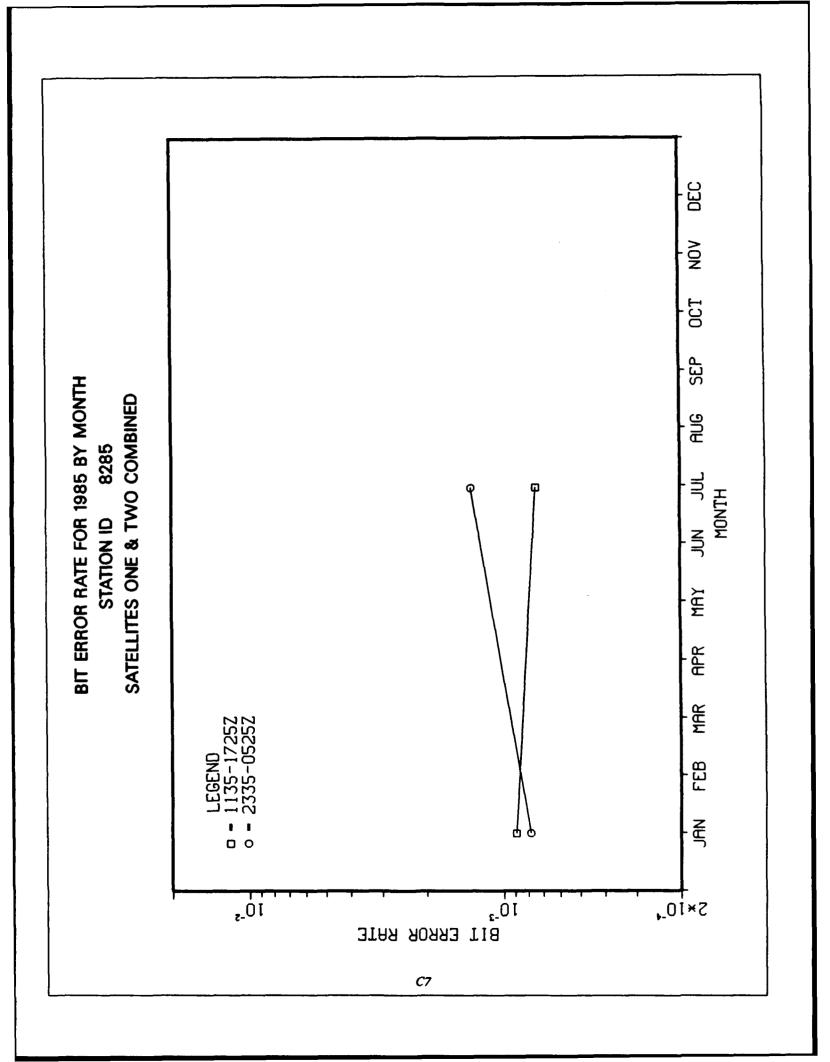


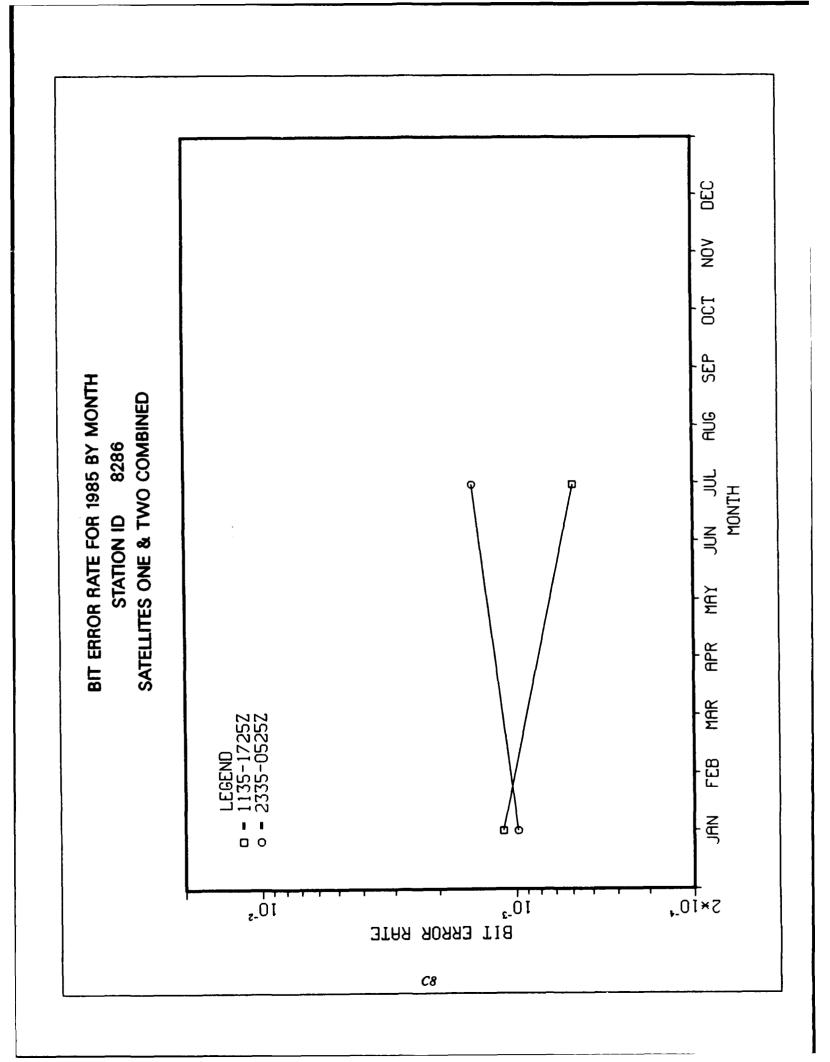


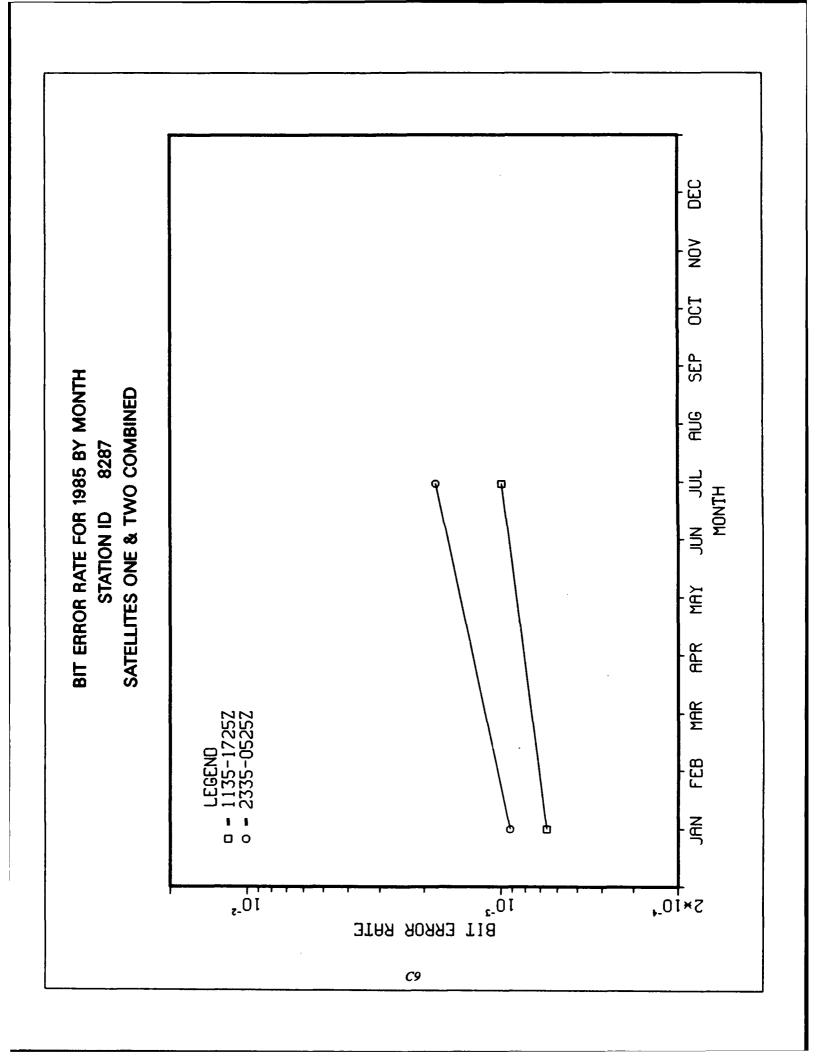
BIT ERROR RATE FOR 1985 BY MONTH
STATION ID 8283
SATELLITES ONE & TWO COMBINED

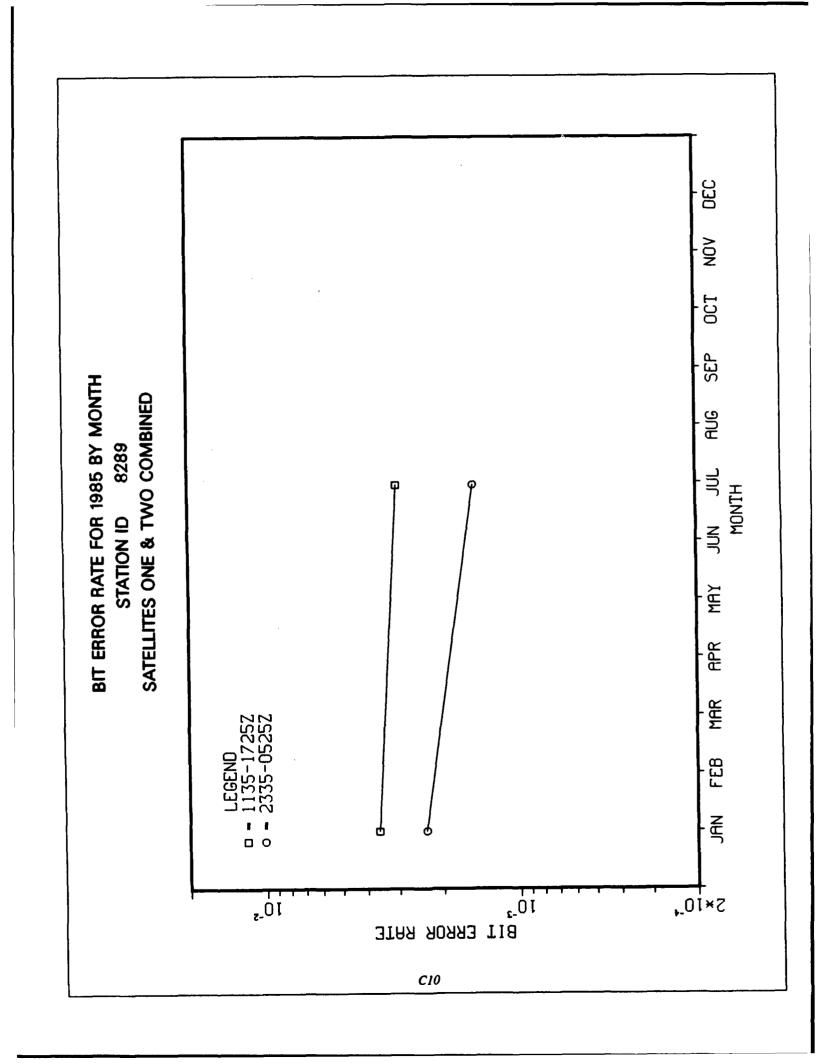




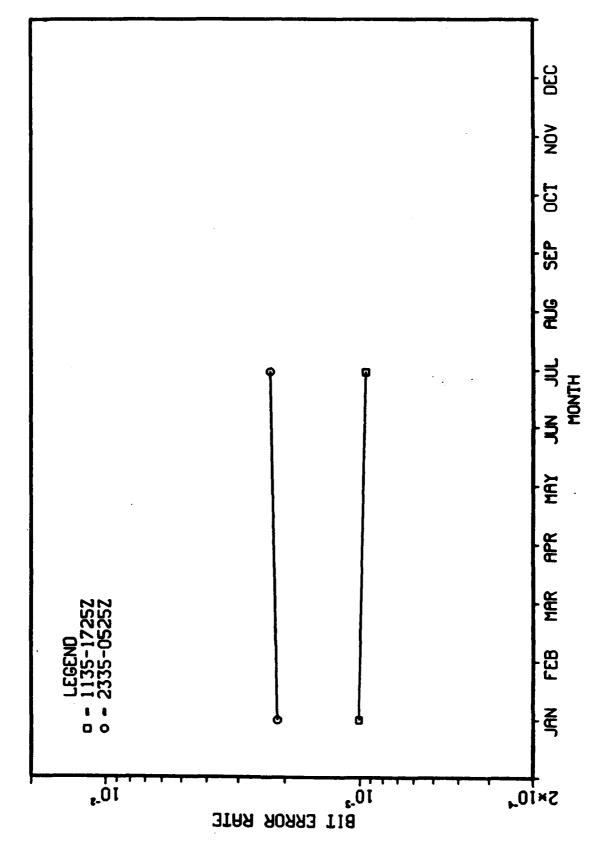


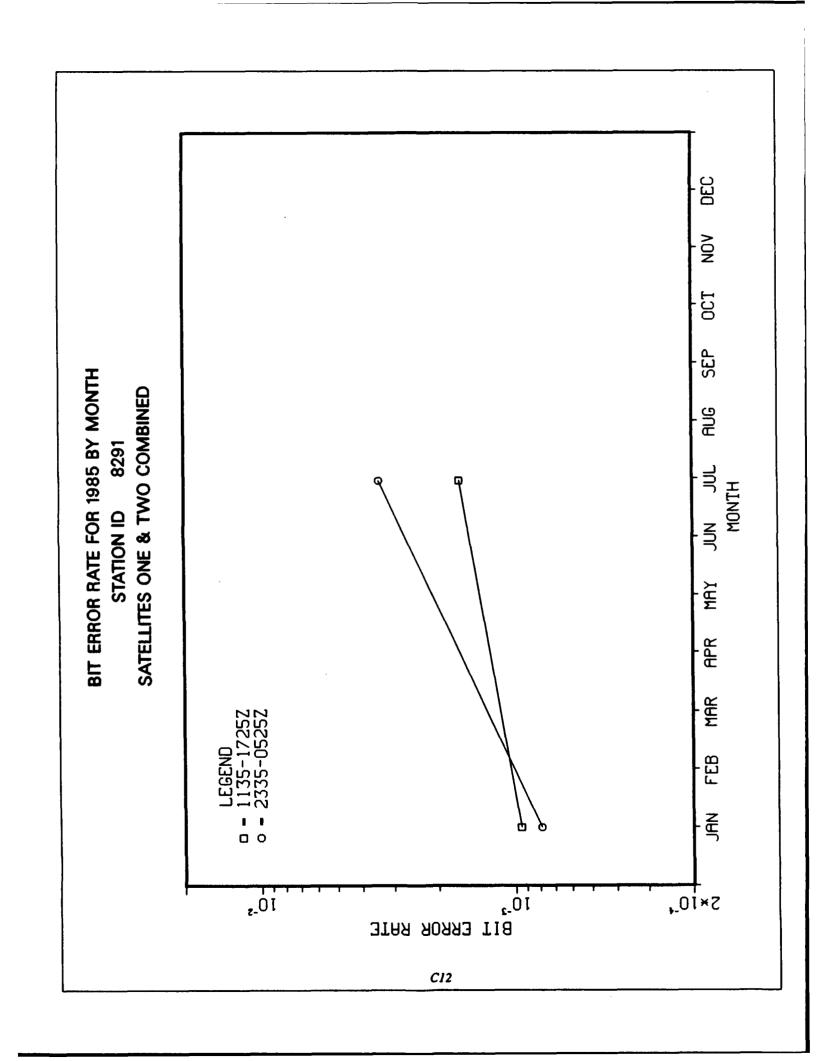


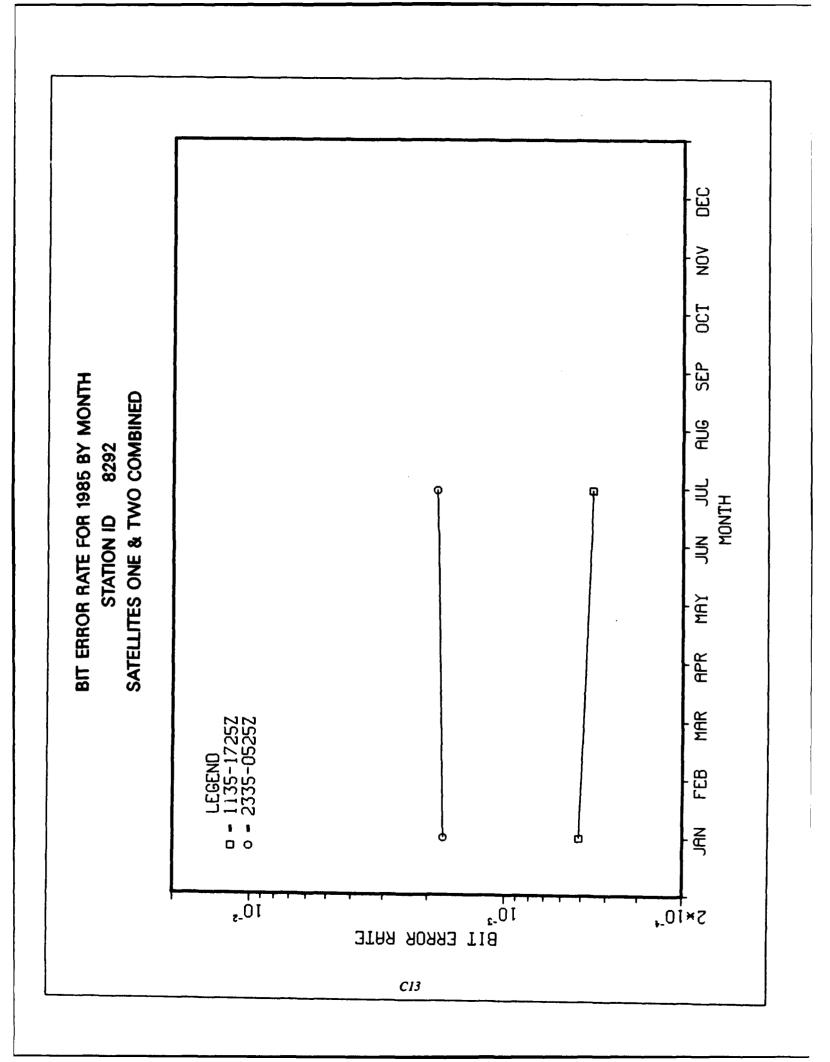


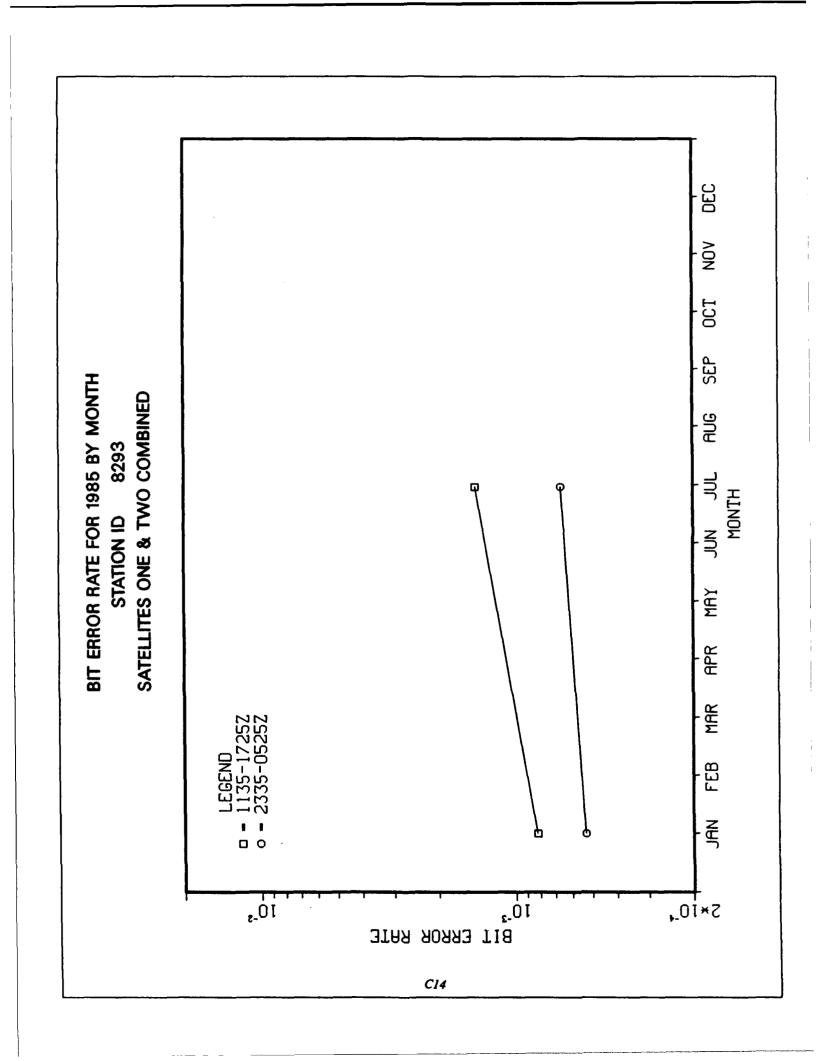


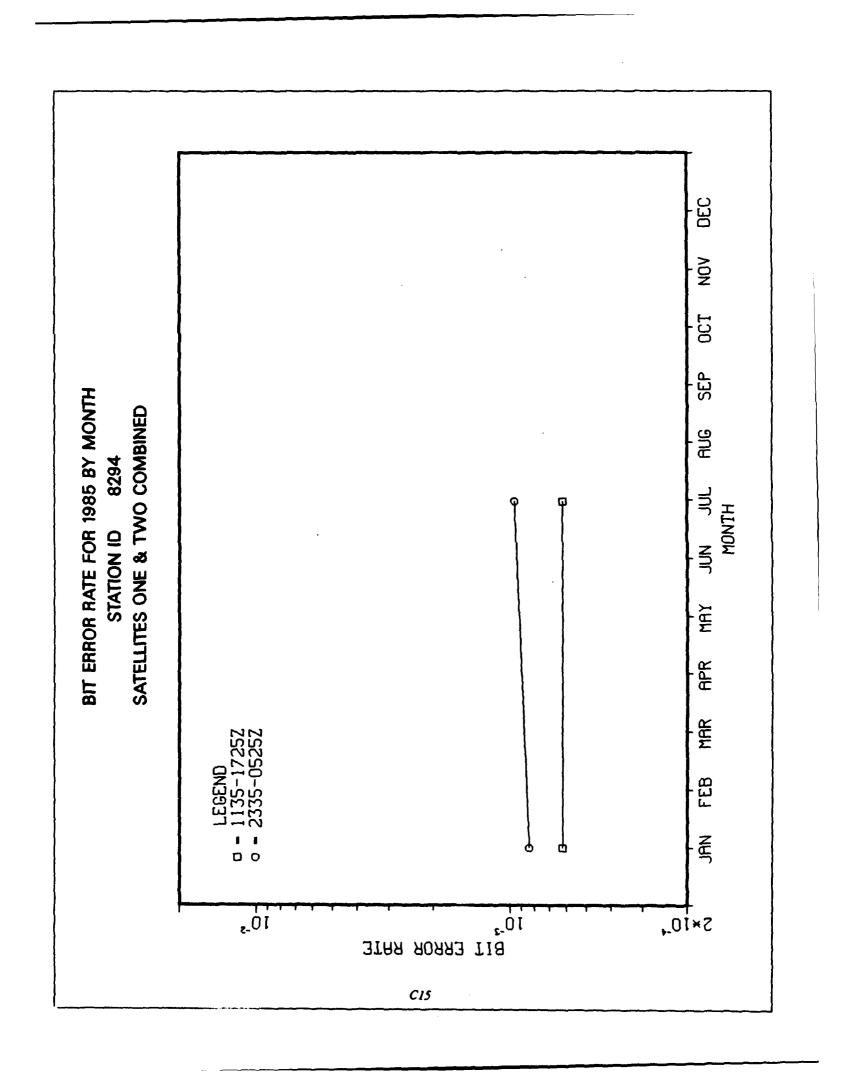
BIT ERROR RATE FOR 1985 BY MONTH
STATION ID 8290
SATELLITES ONE & TWO COMBINED



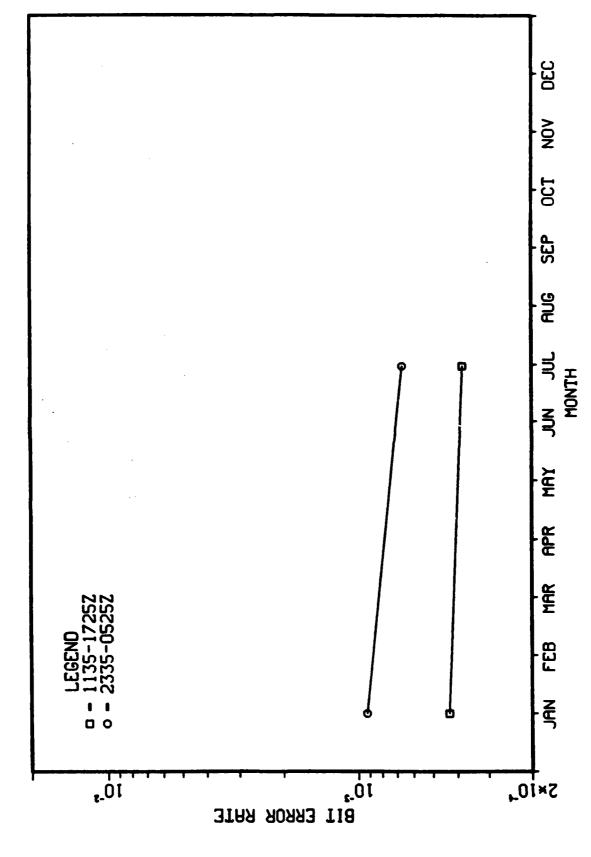


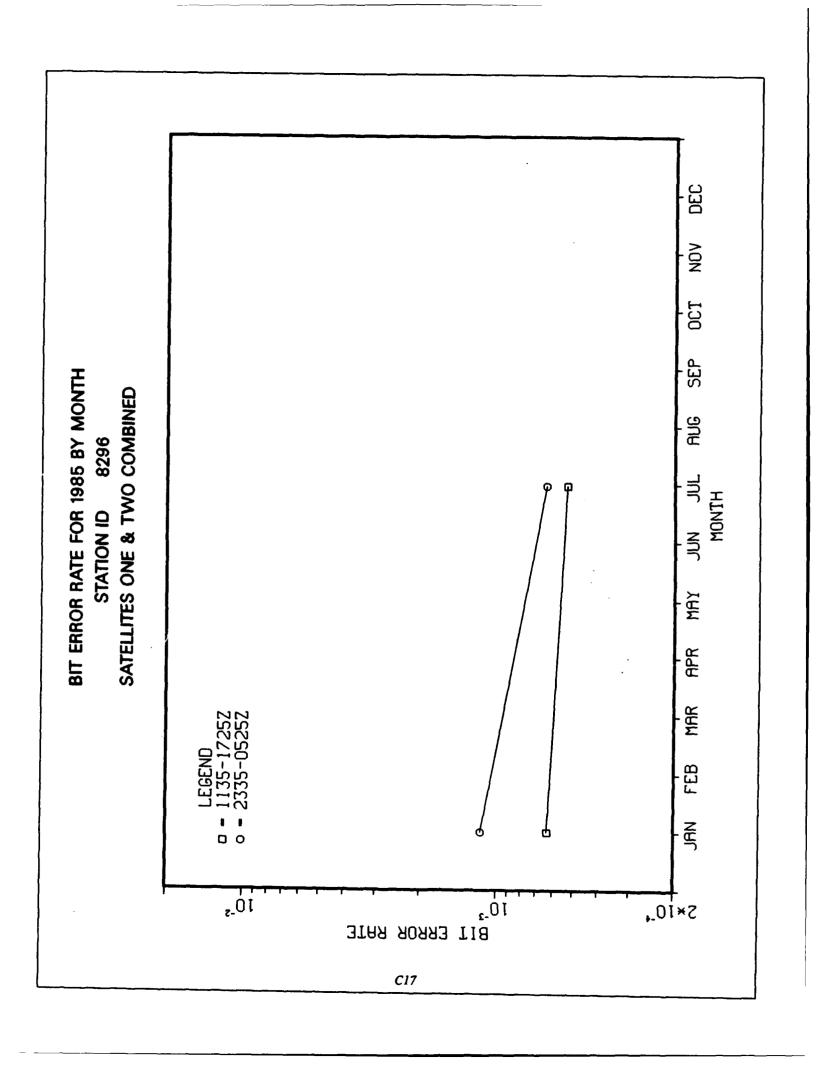


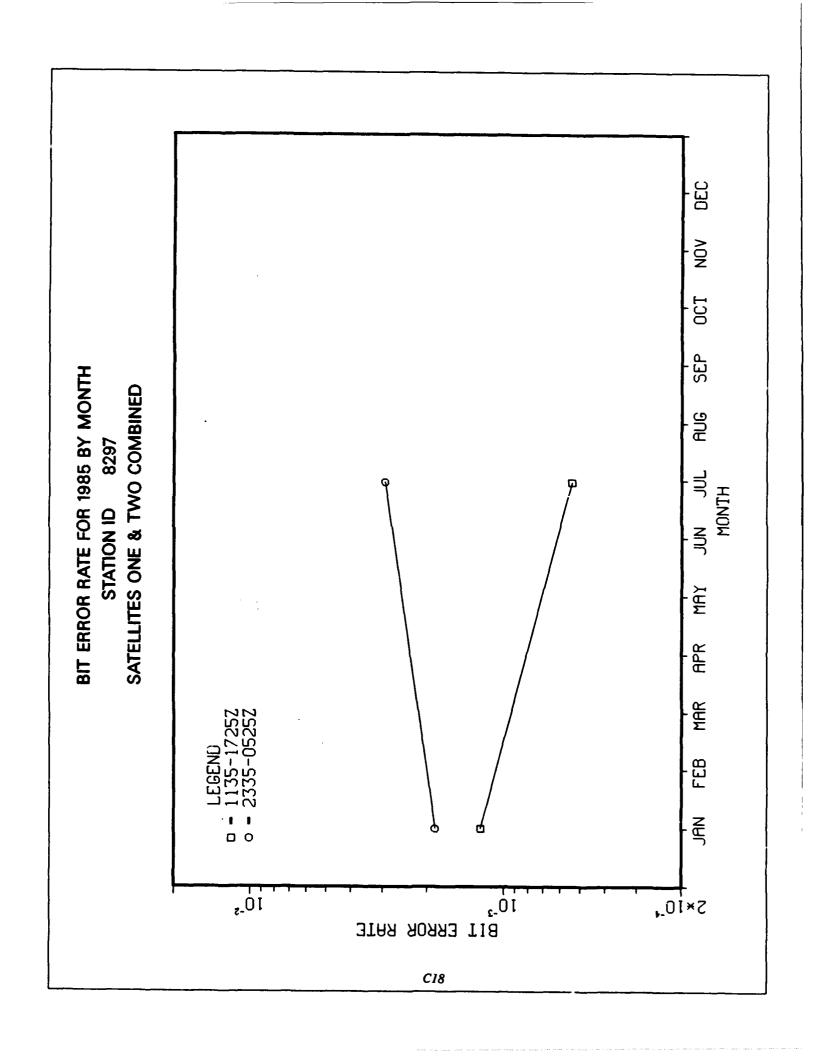


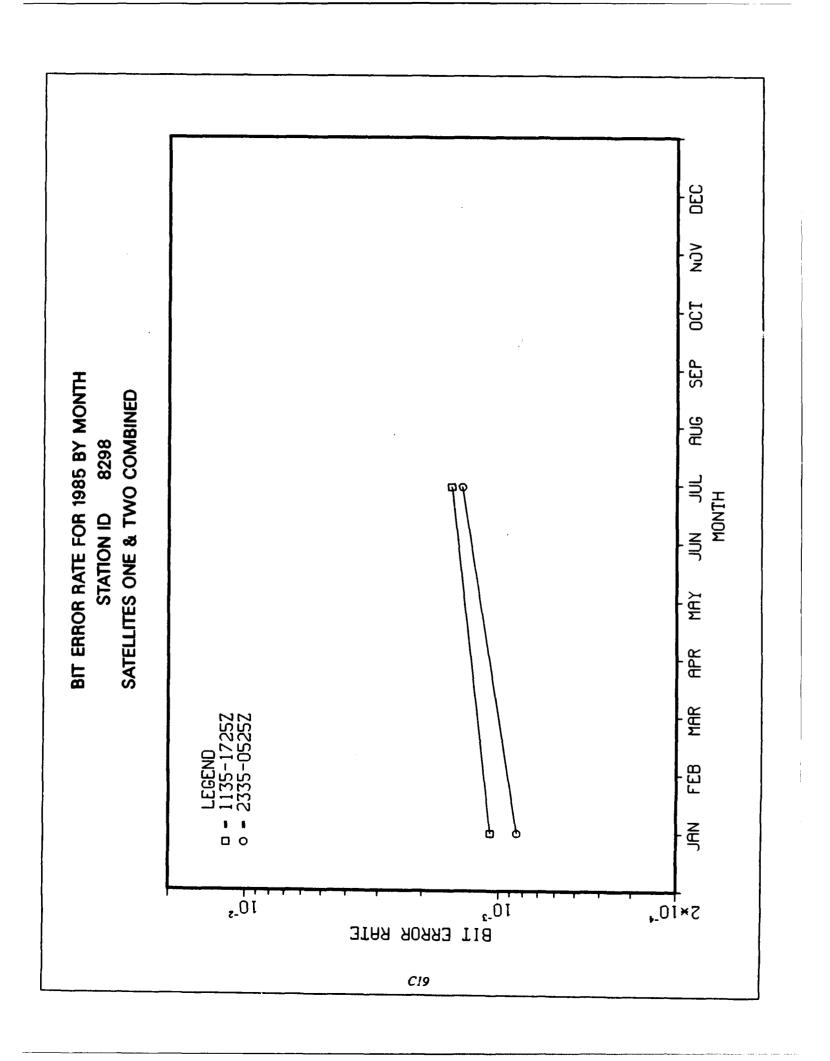


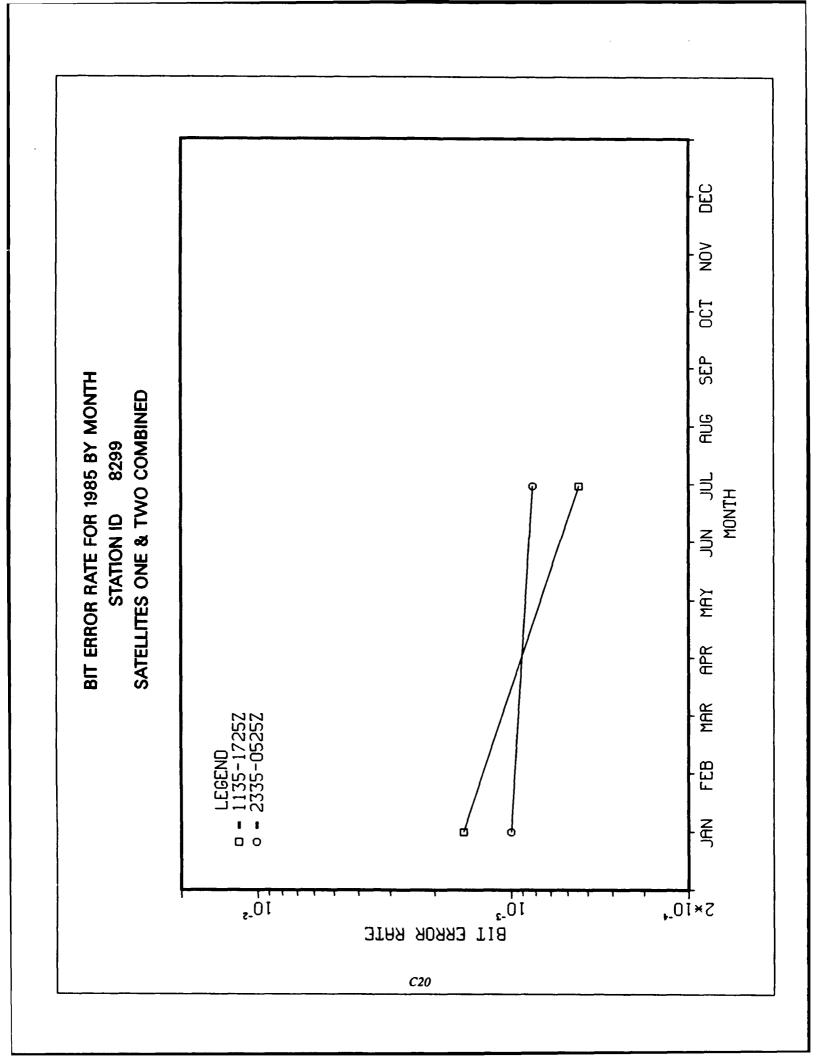
BIT ERROR RATE FOR 1985 BY MONTH
STATION ID 8295
SATELLITES ONE & TWO COMBINED





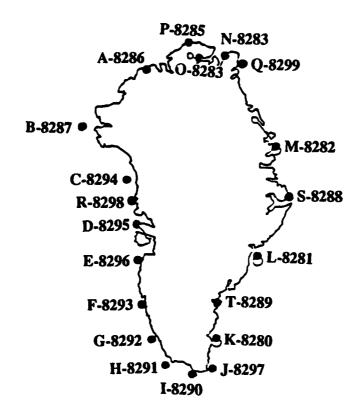




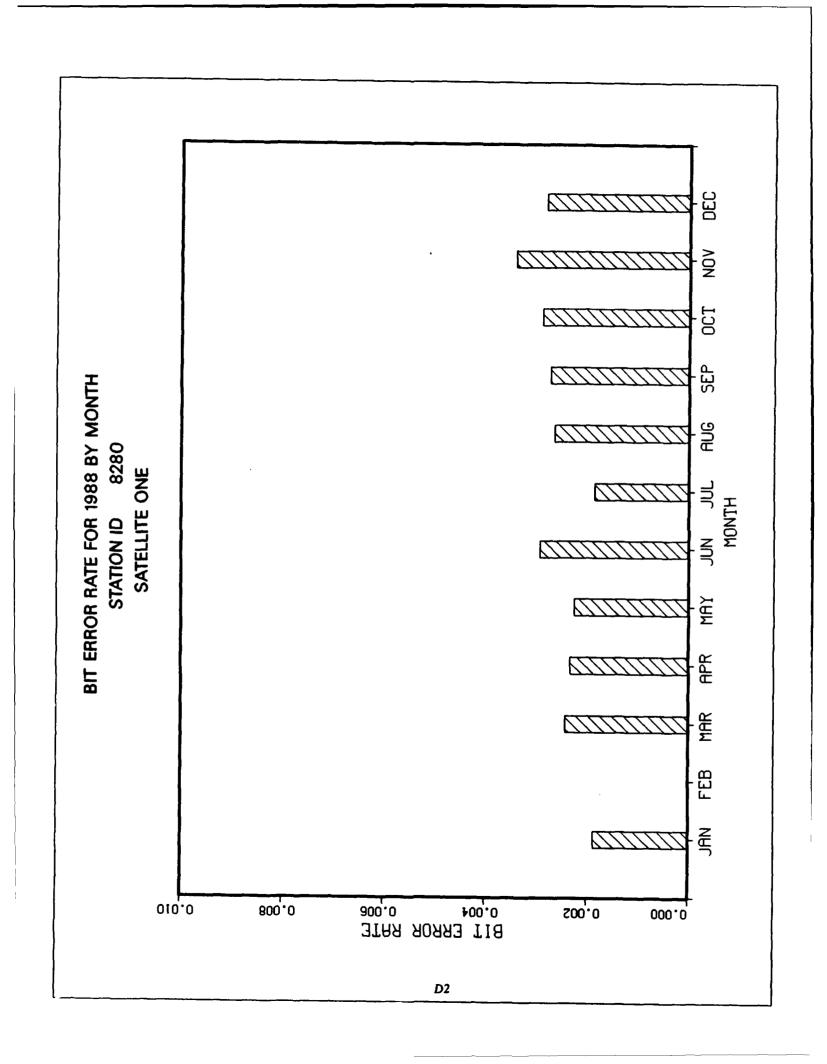


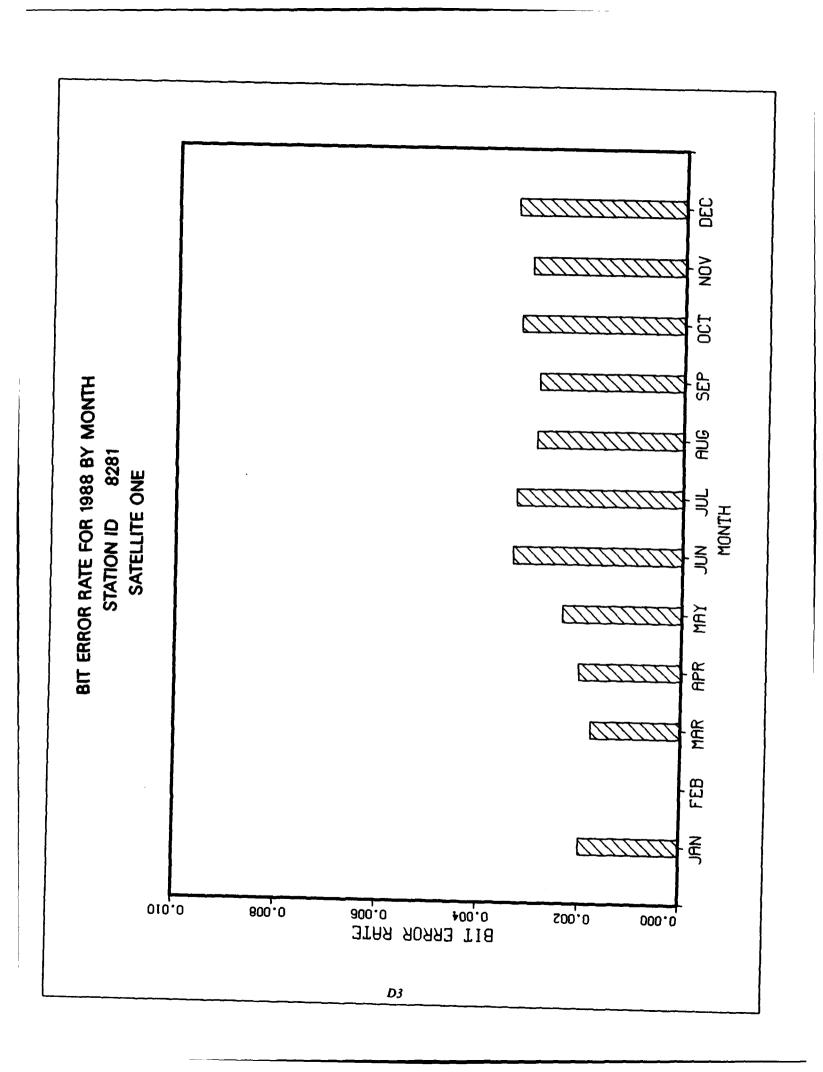
APPENDIX D

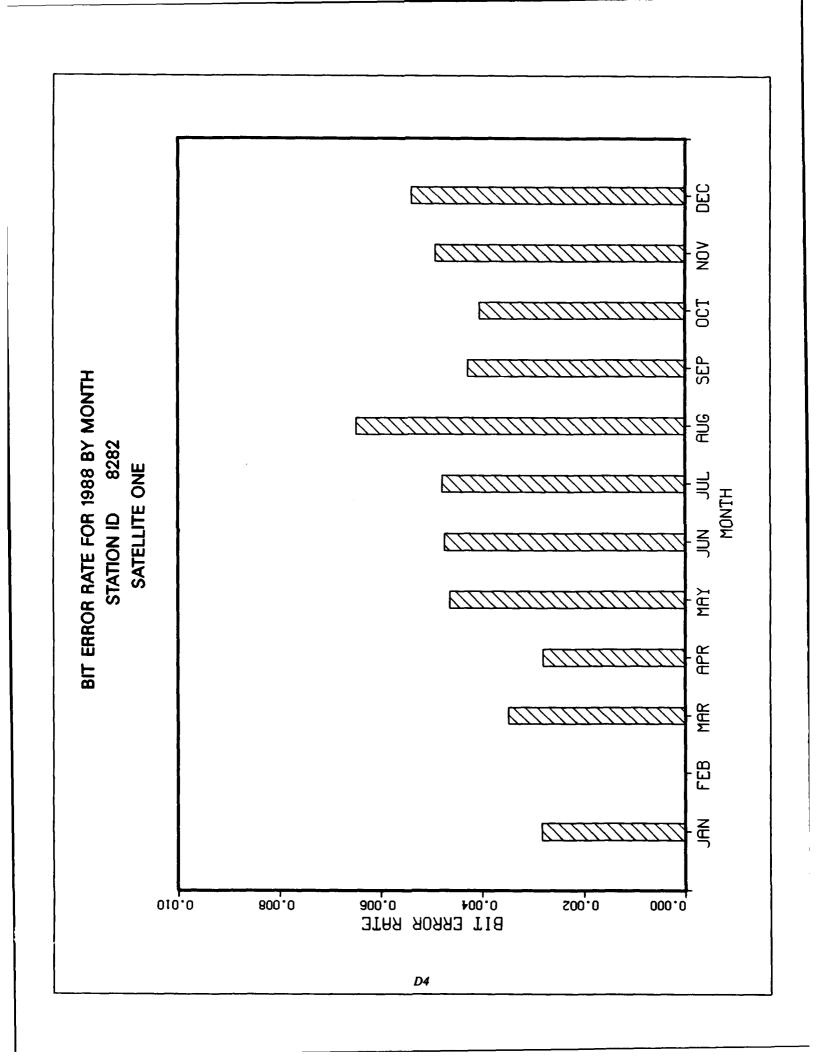
MONTHLY BIT-ERROR-RATE DATA FOR 1988



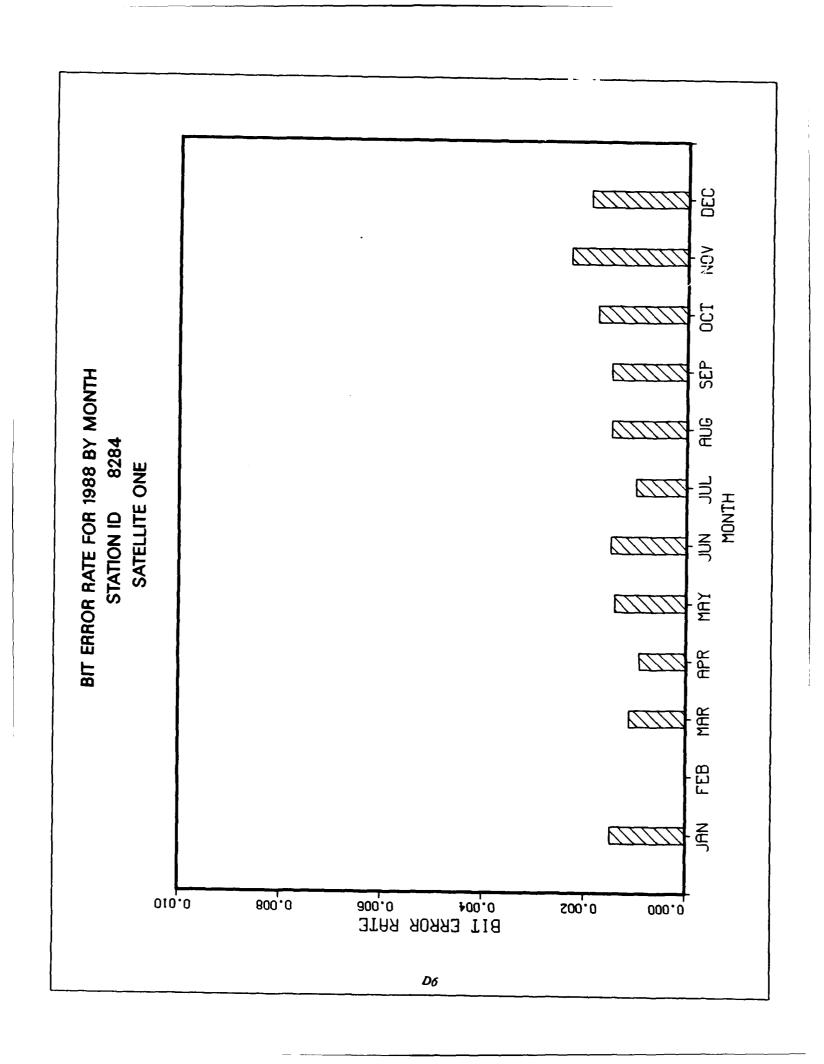
	Station	Location	WMO-NR	Argos-MR	Established
A-	Hali Land	81 *44 'N, 57*00 'W	04-207	8286	jul . 1982
B-	Carey Ser	76*38'H, 73*00'W	04-203	6187	Aug. 1979
C-	Edderfugledet	74°02'H, 57°49'W	04-208	6274	Sep.1981
D-	Mugssuaq	70*41'H,54*37'W	04-214	8295	Aug. 1982
E-	Agto	67*47'H,53*50'W	04-228	8296	Aug. 1983
F- 1	Siorelik	65°01'N,52°33'W	04-242	8293	Jun.1983
G- :	Frd.håbs Isblink	62*34'N, 50*25'N	04-253	8292	Jun.1982
H-	Munarssuit	60*46'N,48*25'W	04-266	0291	Jun. 1981
I -	Angissoq	59°59'N,45°12'W	04-285	6290	Jun.1981
J-	Prins Chr.sund	40°02'N,43°07'W	04-390	8297	Okt.1782
K-	Ikermierssuk	61*56'H,42*04'W	04-365	8280	Aug. 1976
L-	Aputiteq	67°47'H, 32°18'W	04-351	8281	Aug.1978
M-	Deneborg	74*18'N,20*13'W	04-330	6282	Aug.1978
N	Station Mord	81-36'N, 16-40'W	04-312	8283	Sep.1979
0 -	Kap Harald Holtke	82°09'H, 29°53'W	04-305	8284	Aug.1979
P-	Kap Morris Jessup	63*40'N, 33*22'W	04-301	8285	Jul.1979
S -	Kep Tobin	70°25'N, 21°58'W	04-340	8286	Aug. 1985
T-	Ikermit	64*47'N,40*18'W	04-373	8289	Okt.1986
Q-	Krøyers Holme	80*41'#,13*55'#	04-313	8299	Jul.1984
R-	Upernevik	72*47'N,56*10'H	04-209	8298	Aug.1984

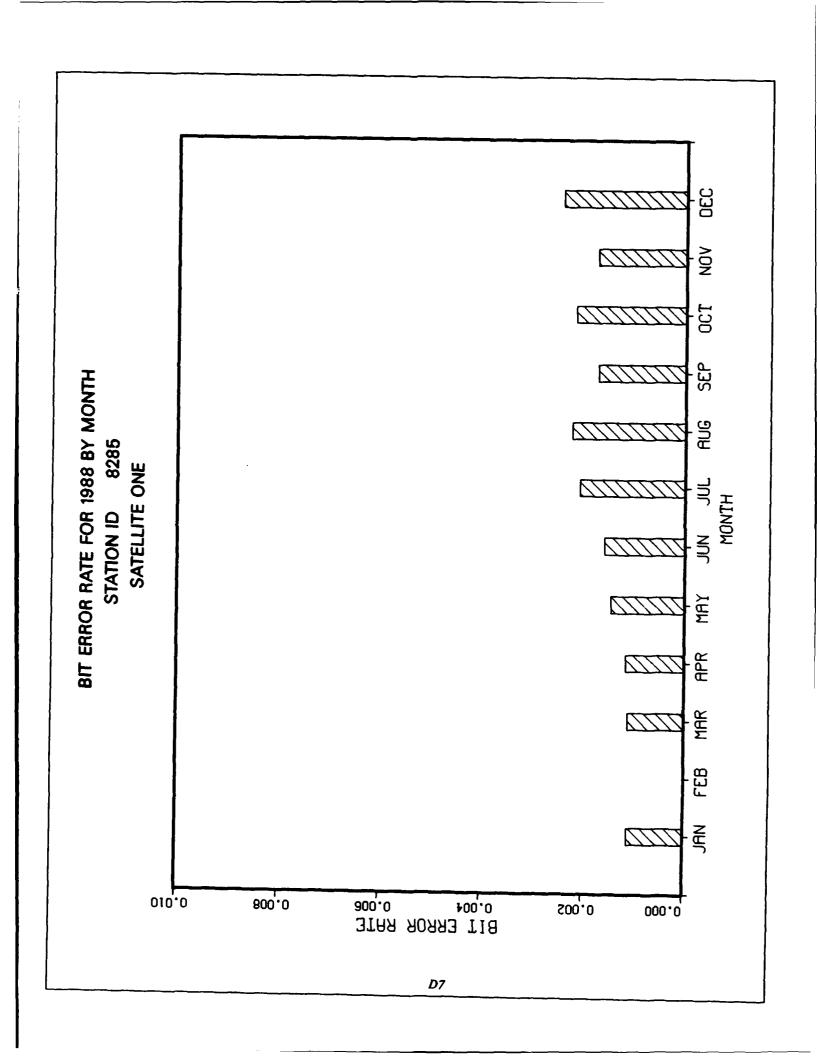


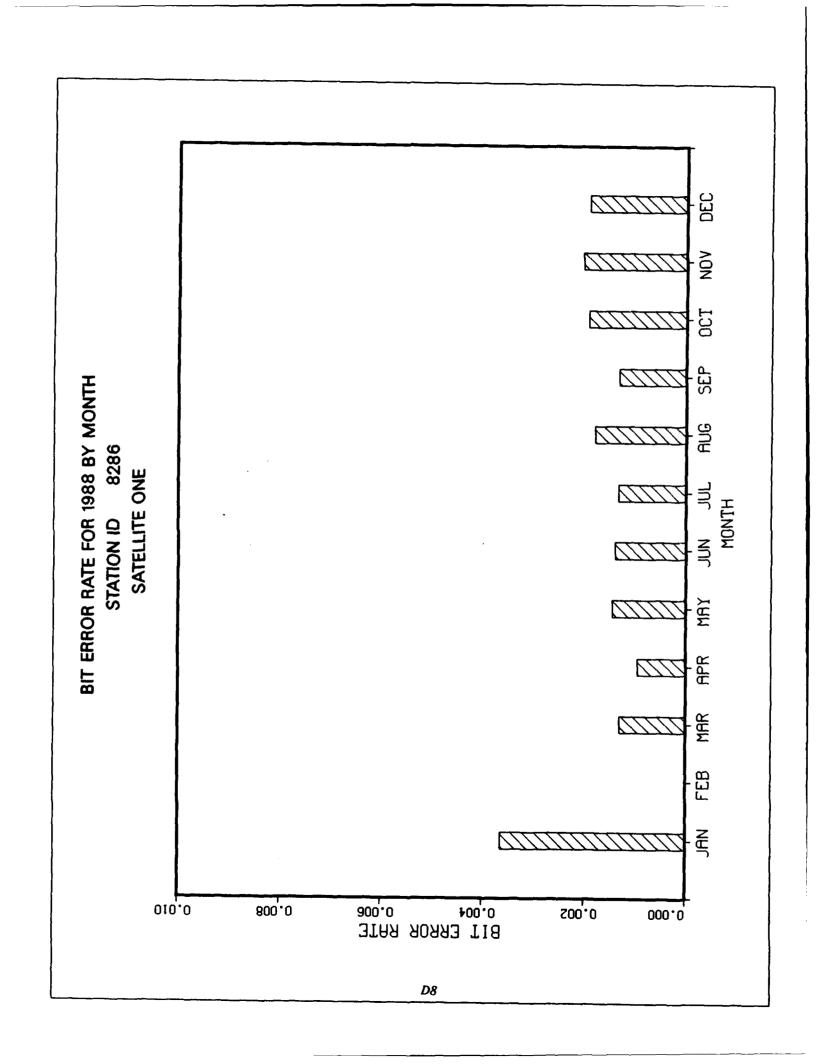


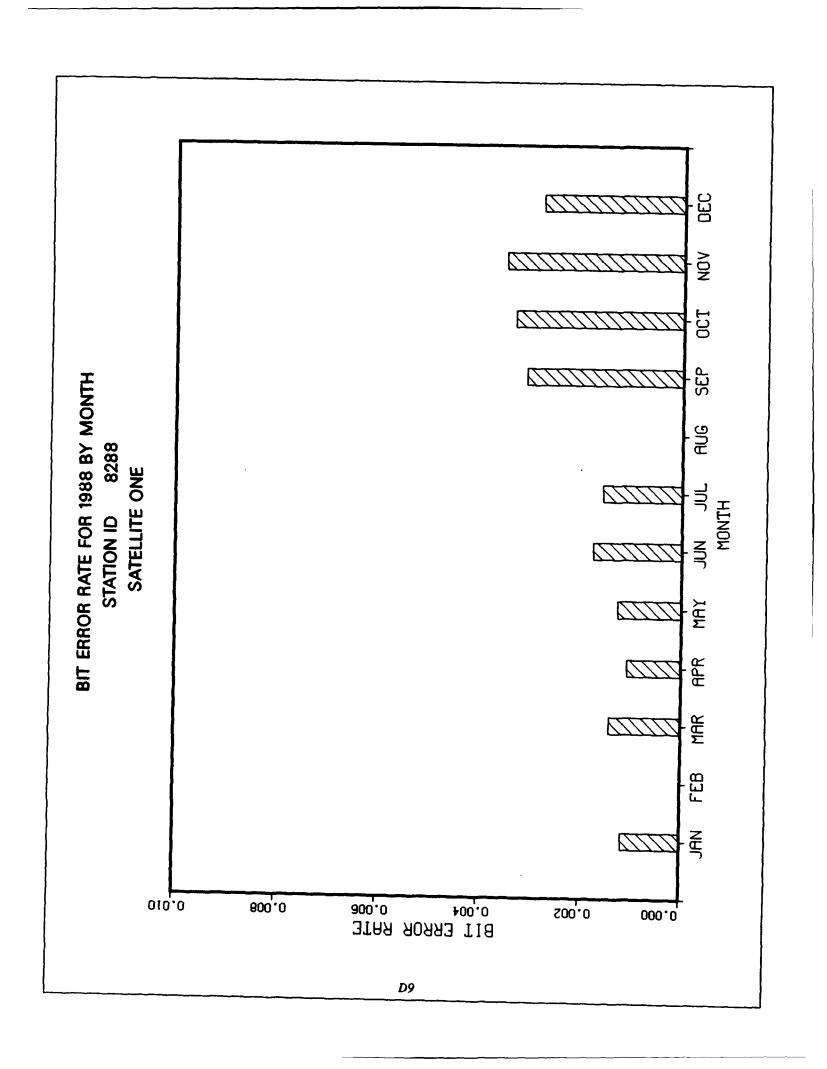


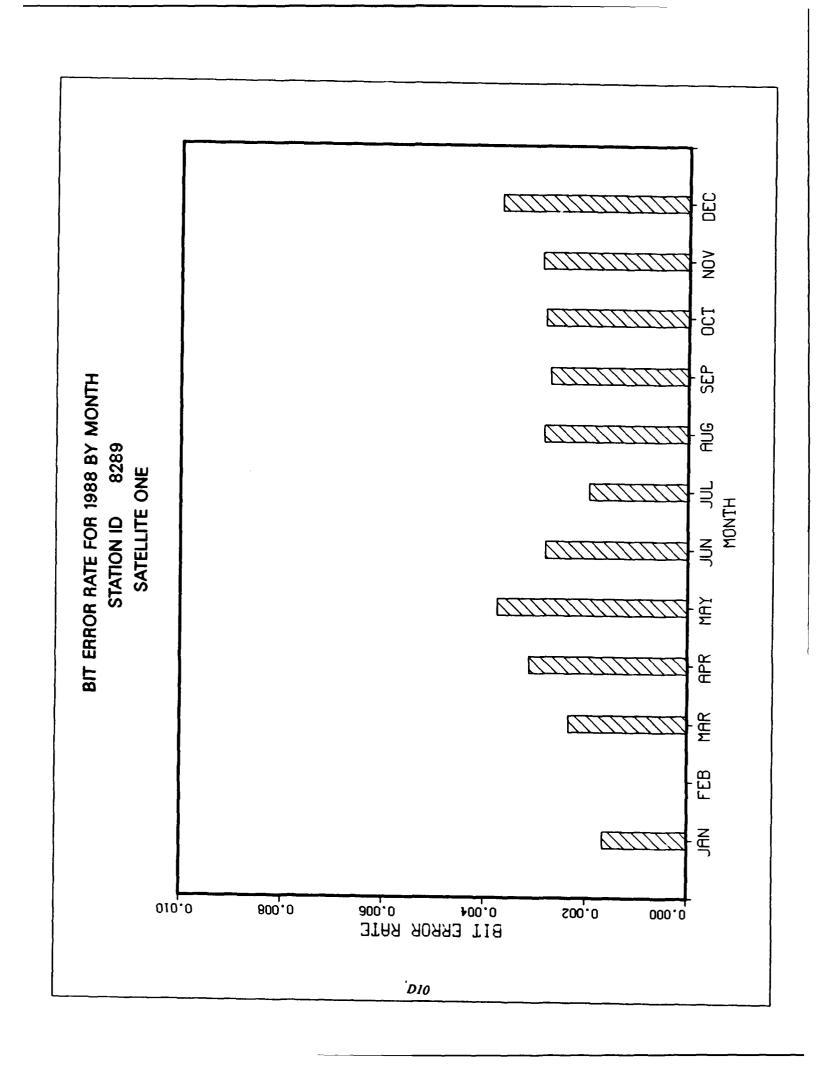
OCT SÉP BIT ERROR RATE FOR 1988 BY MONTH 8283 SATELLITE ONE STATION ID FEB *ZZZZ* ₹ SOO.0 010.0 800.0 900.0 100.0 000.0 BIT ERROR RATE

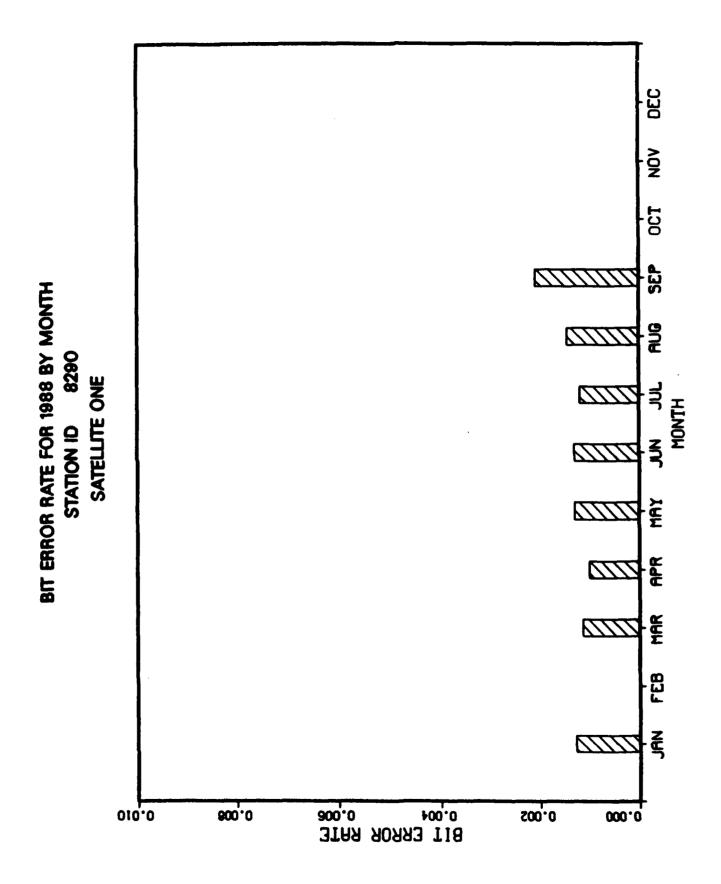


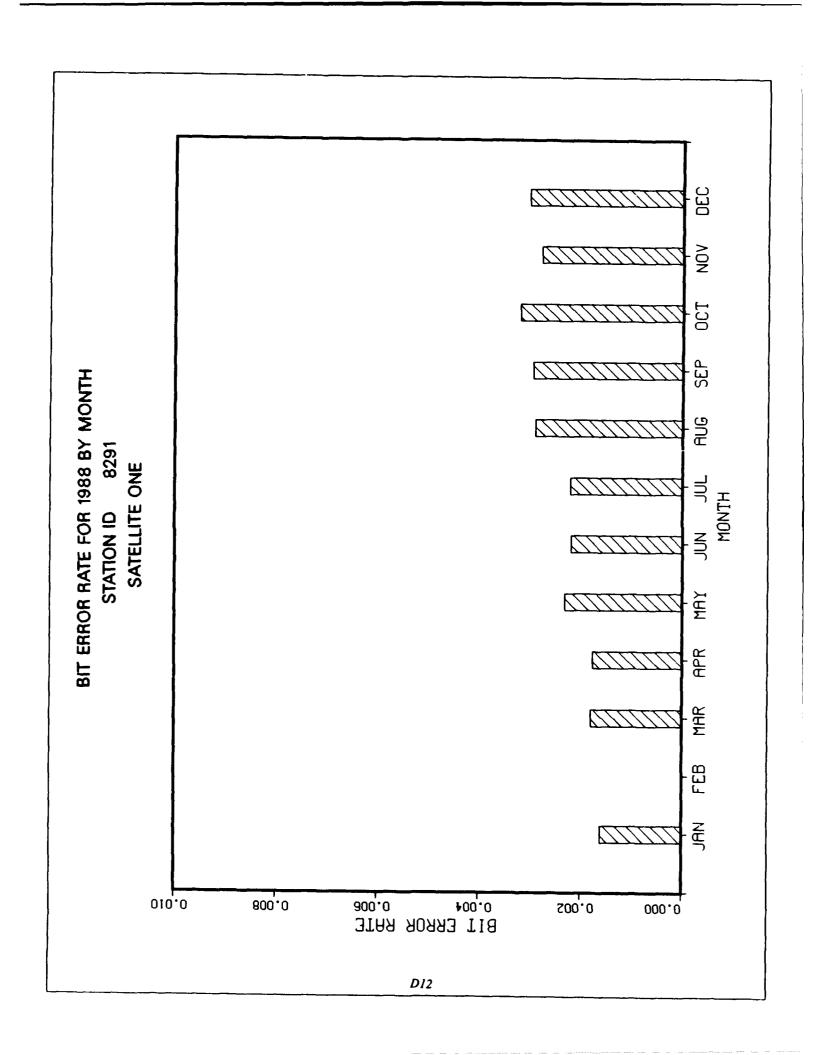


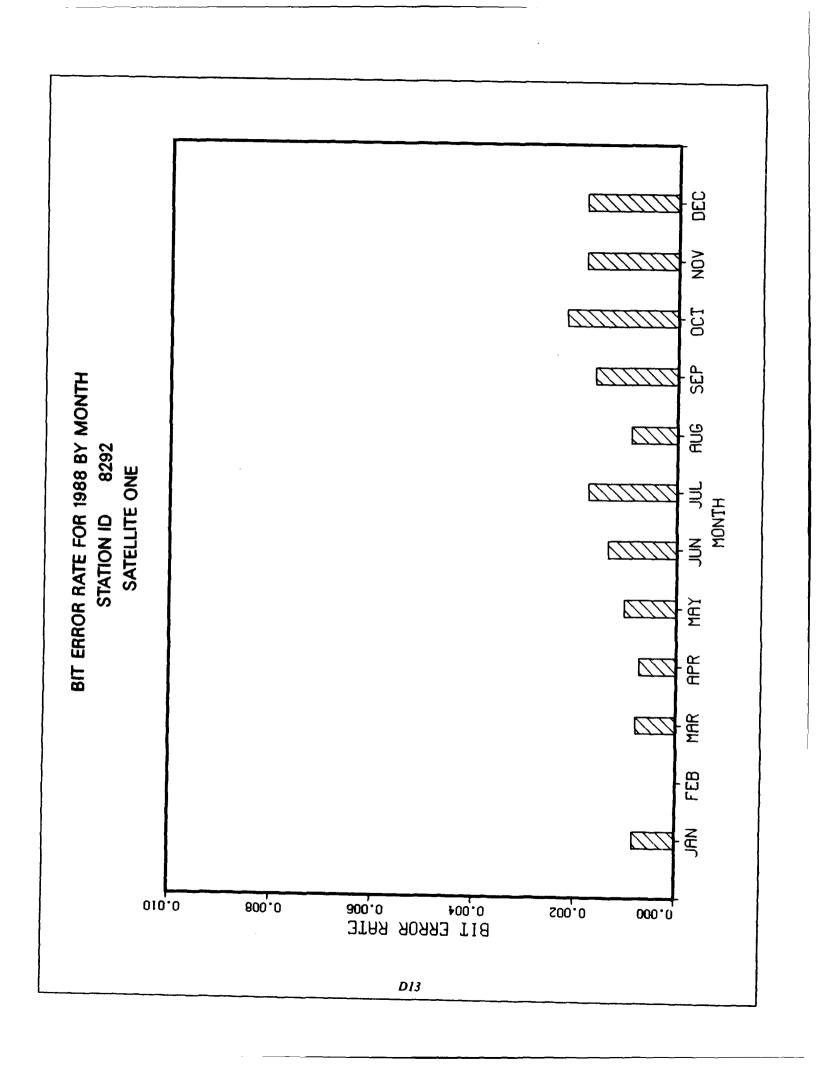


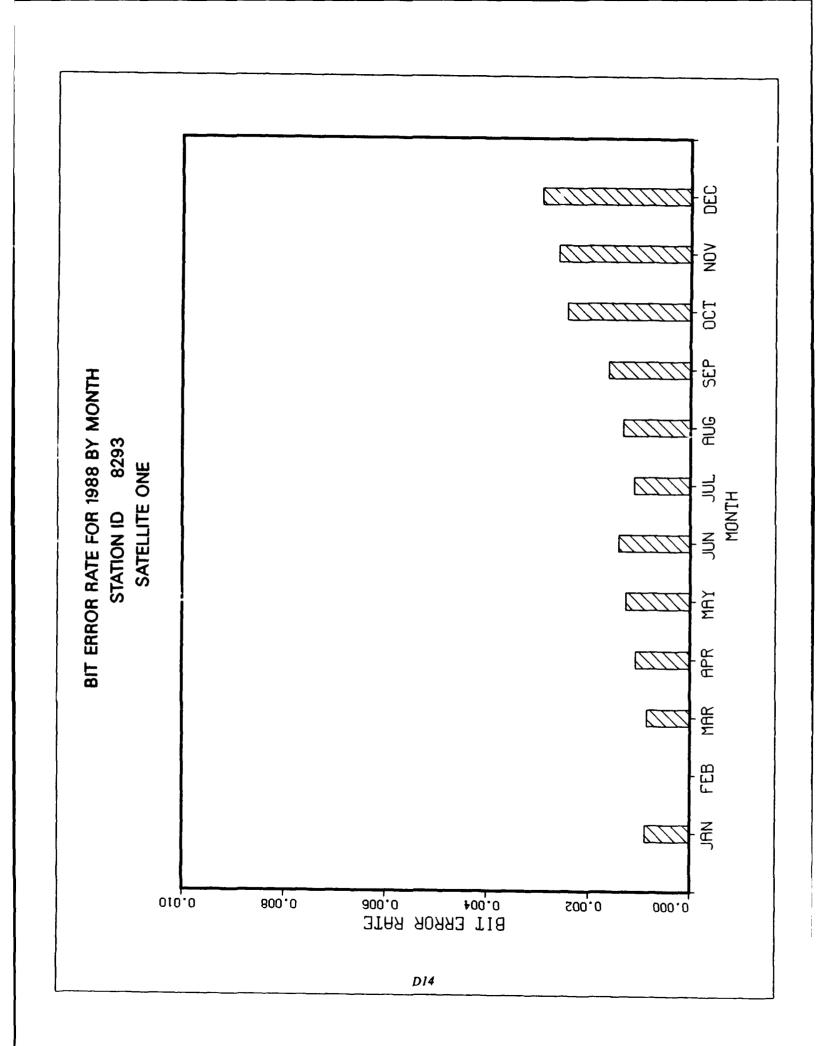


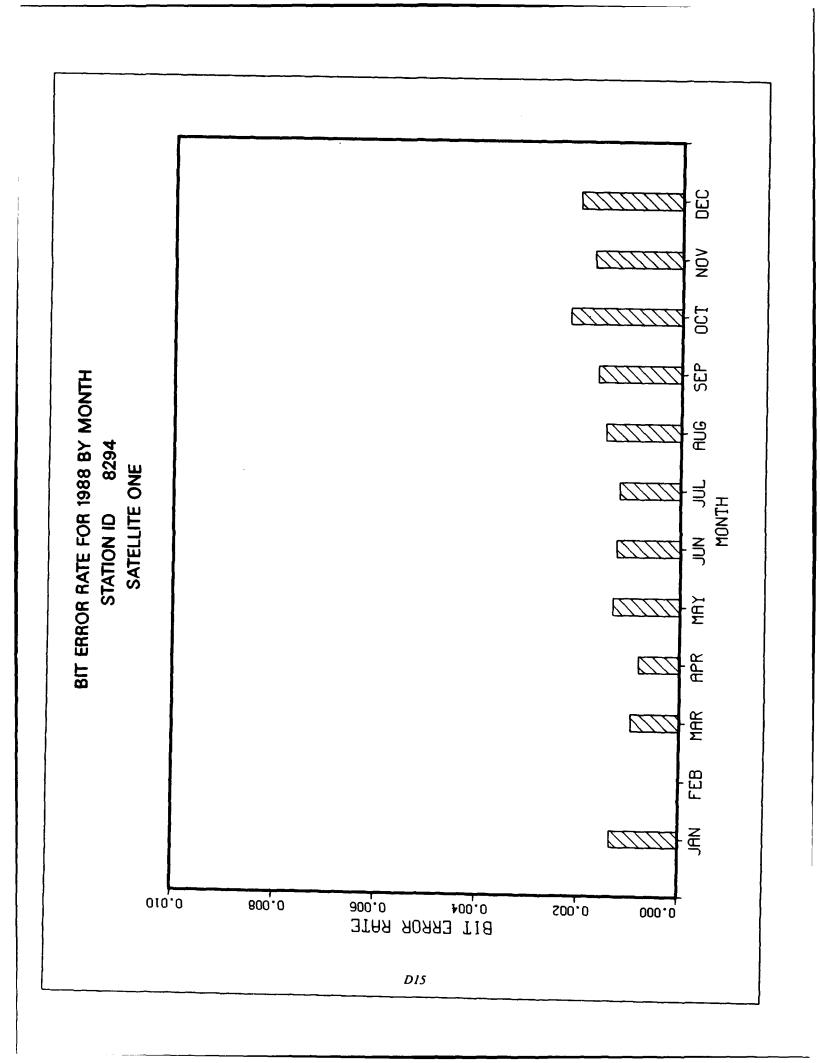




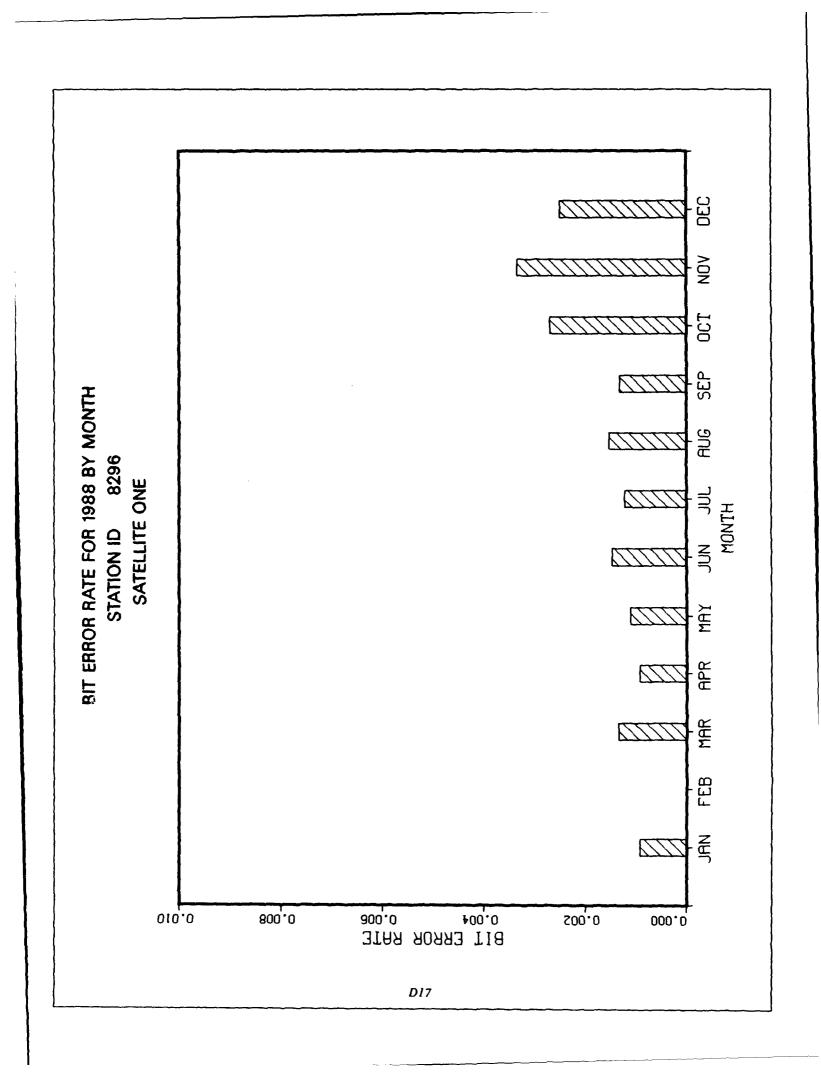


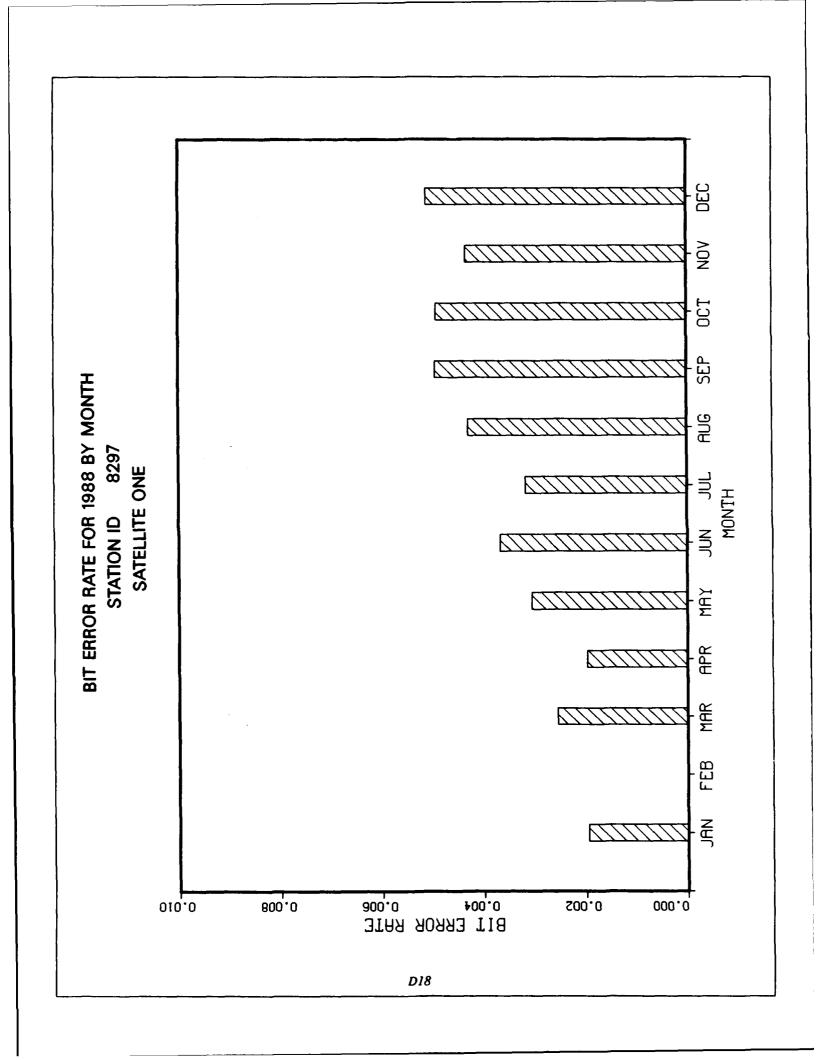


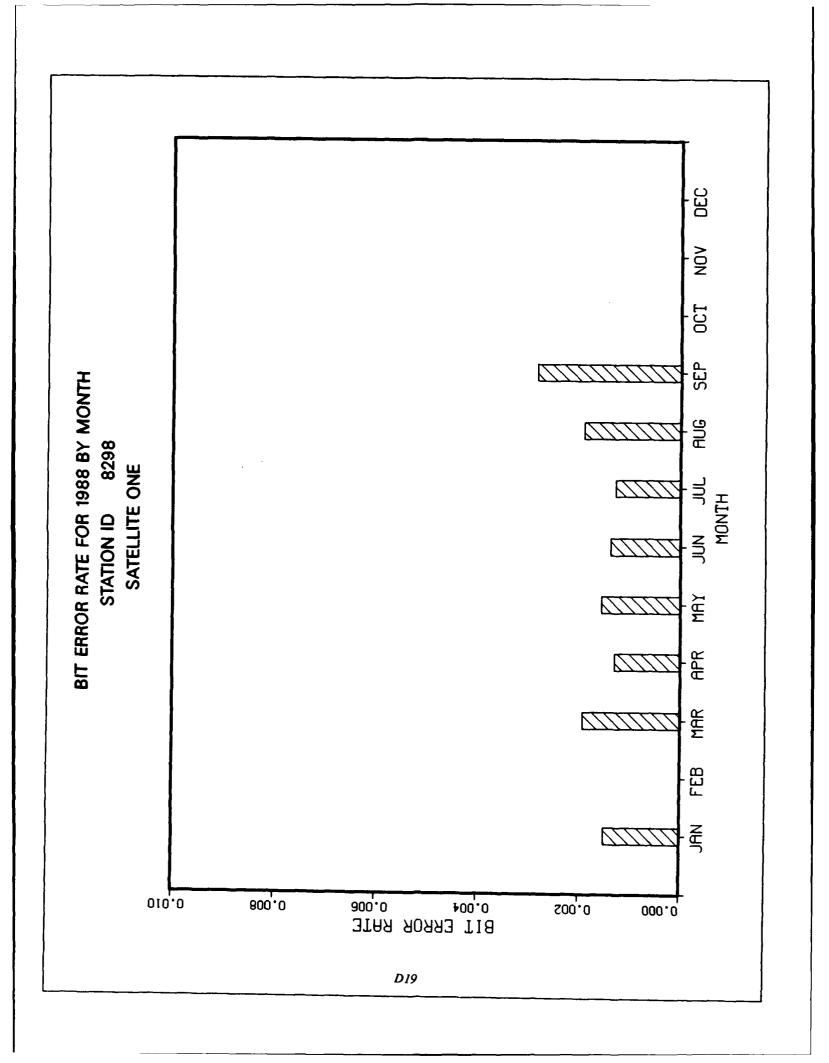


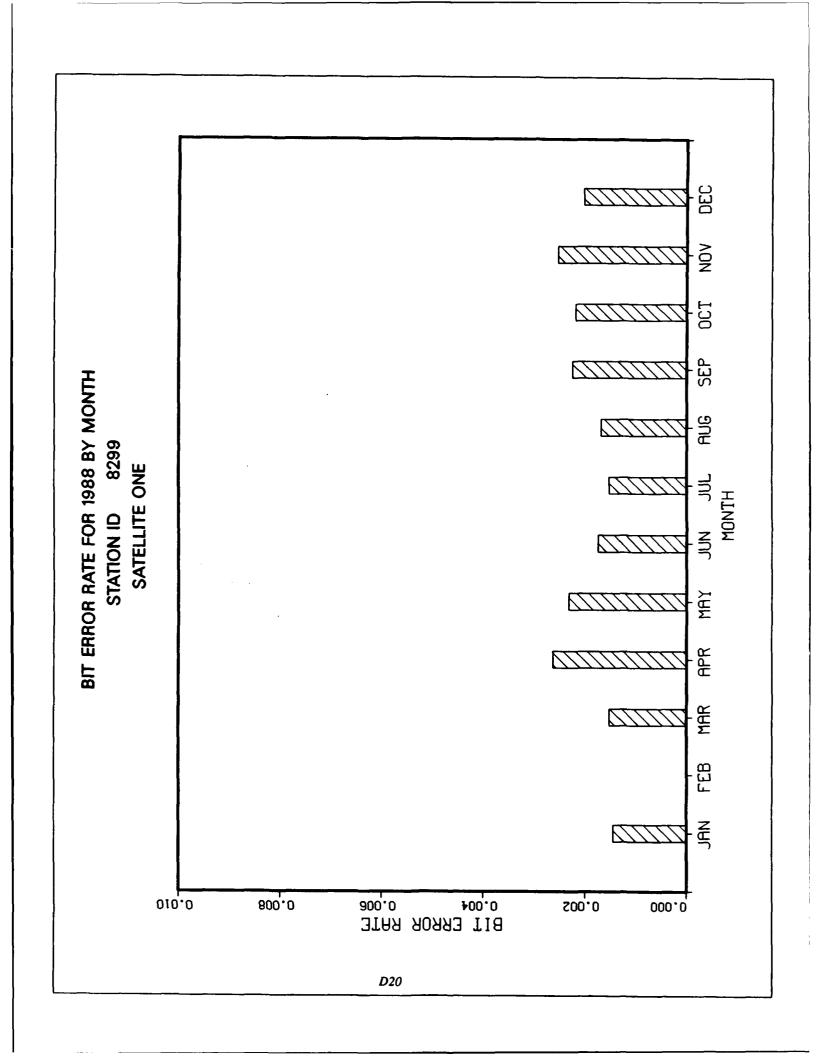


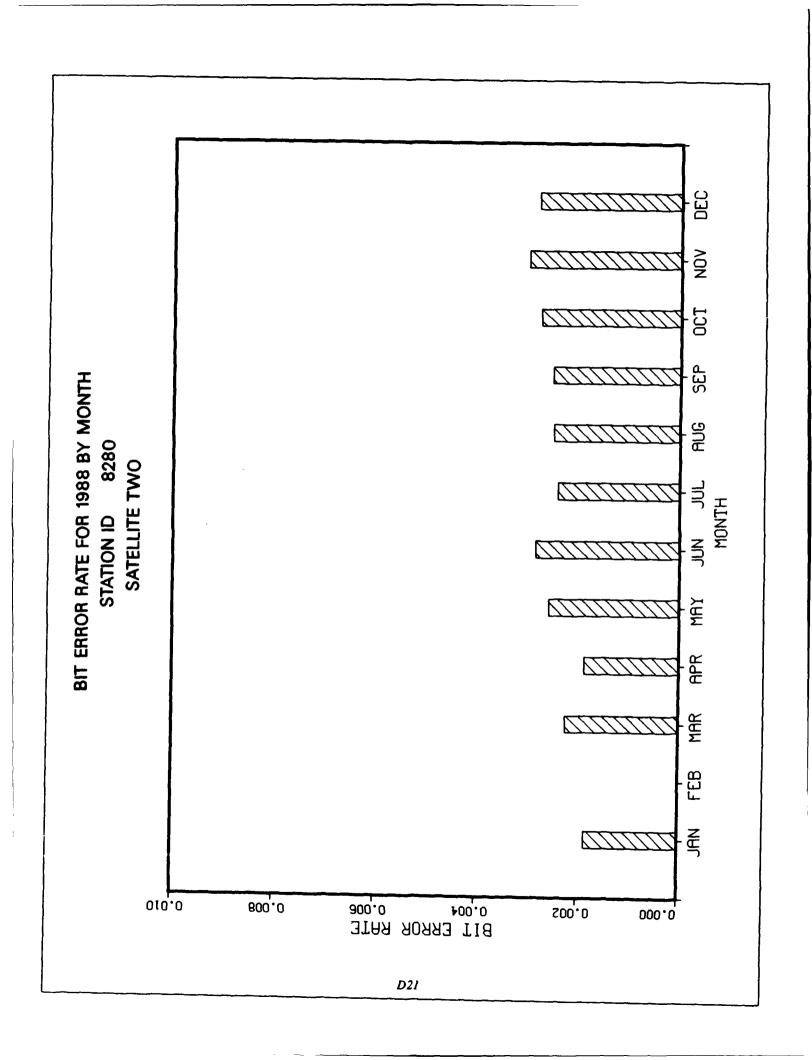
BIT ERROR RATE FOR 1988 BY MONTH 8295 STATION ID 828 MAY APR FEB S00.0 BIT ERROR RATE 0.006 900.0 800.0 000.0 010.0

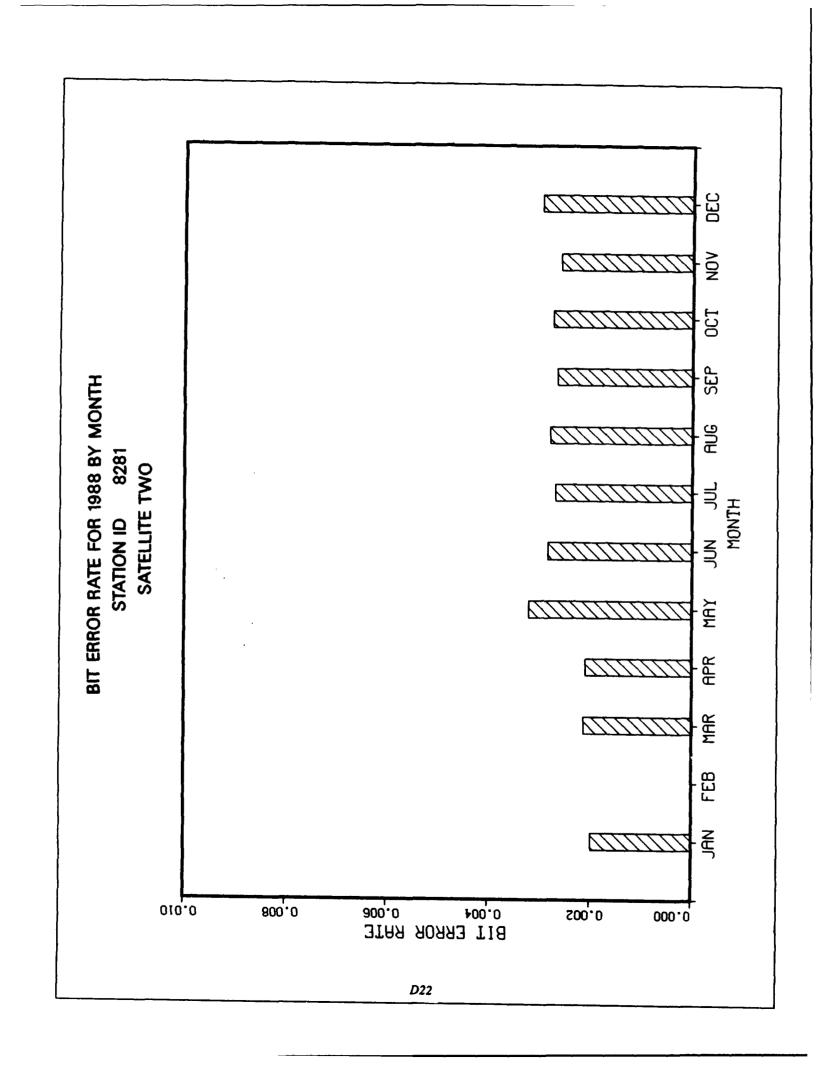


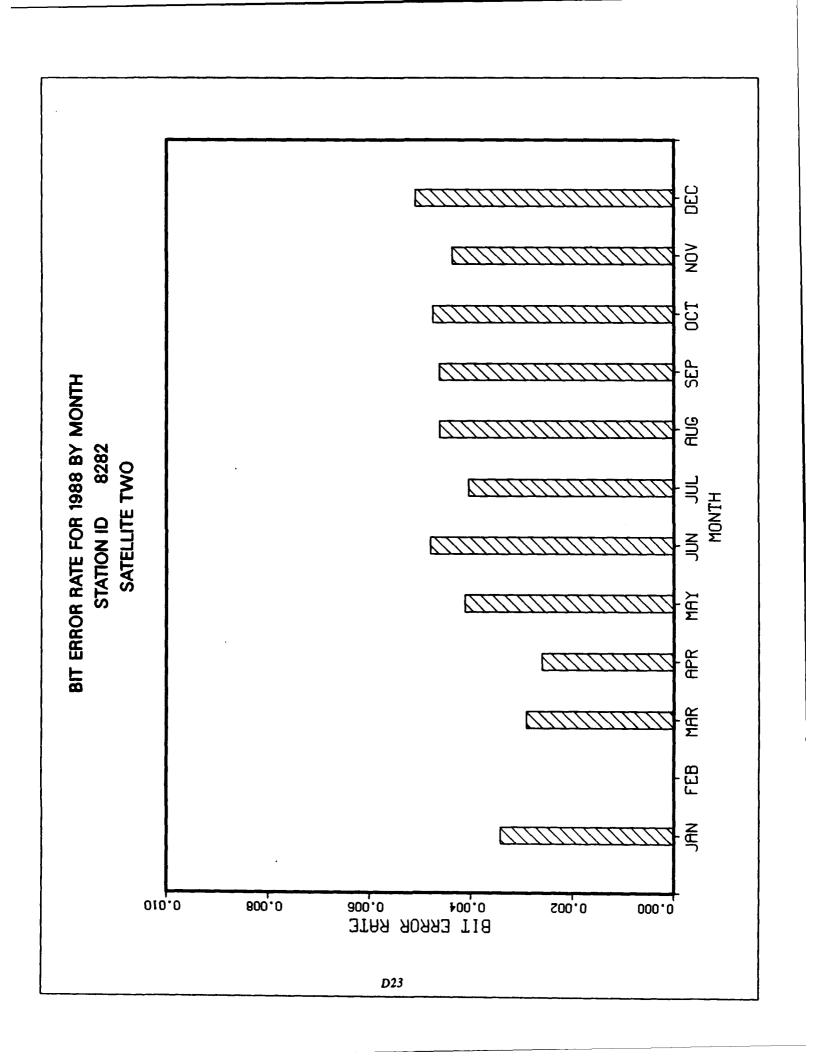


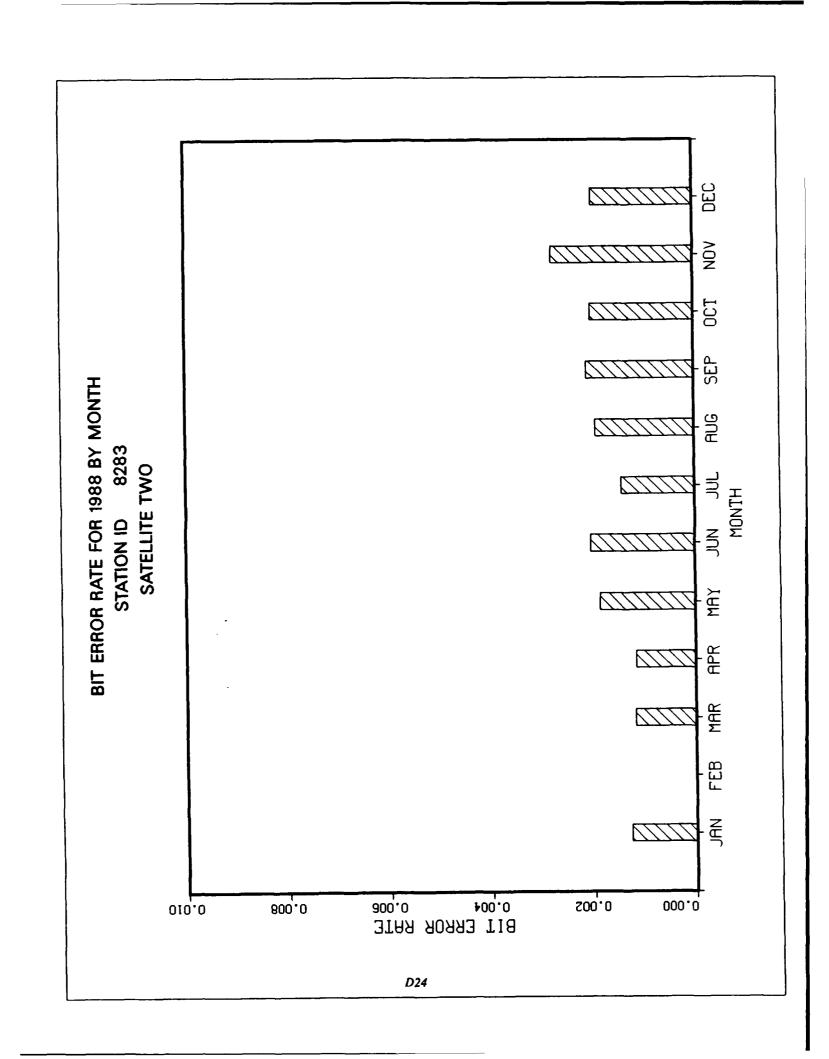


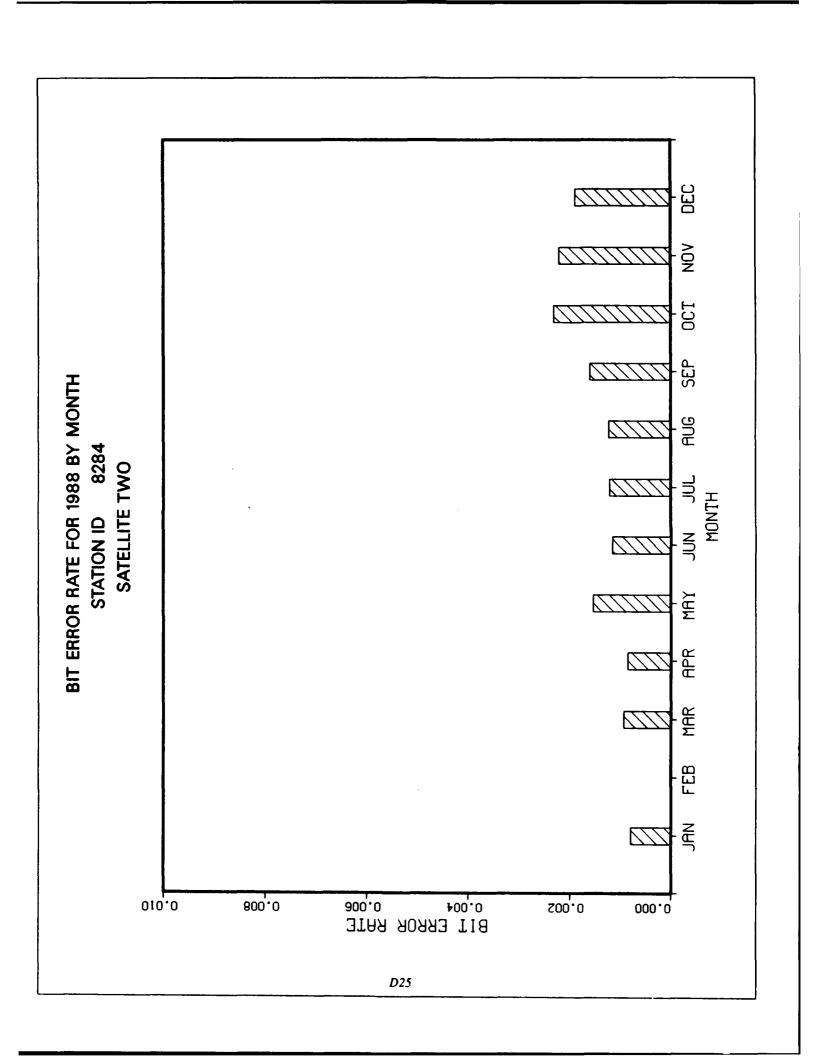


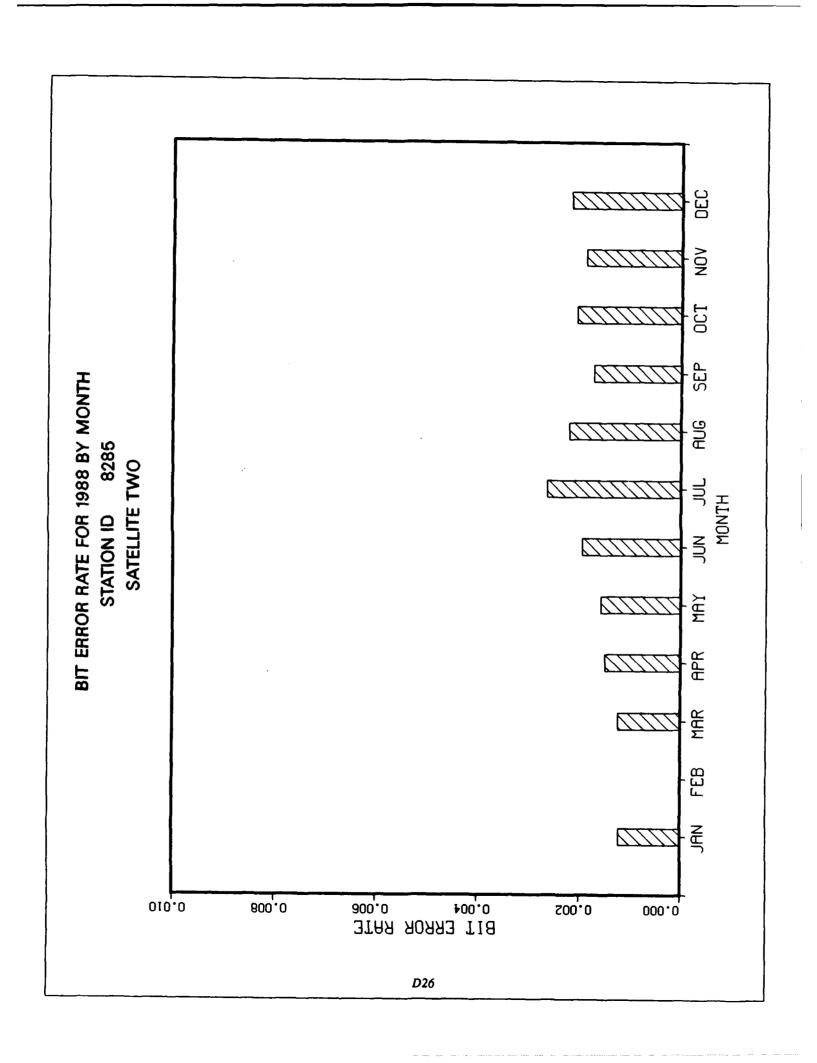


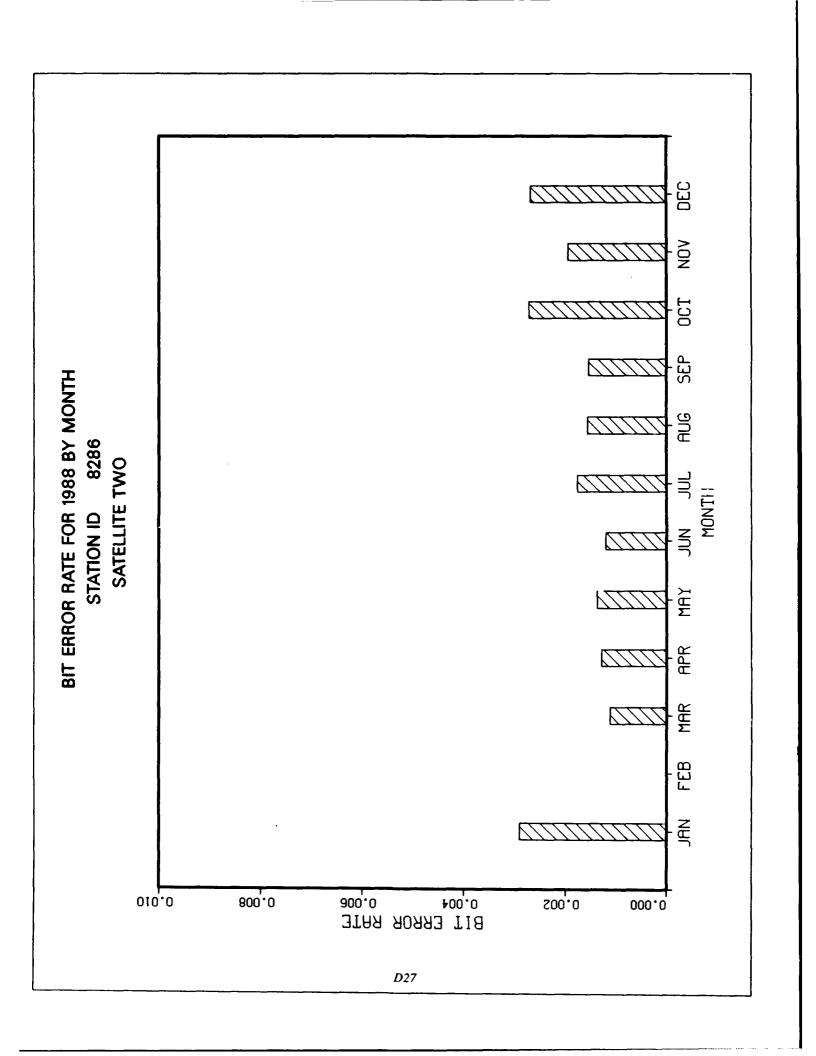


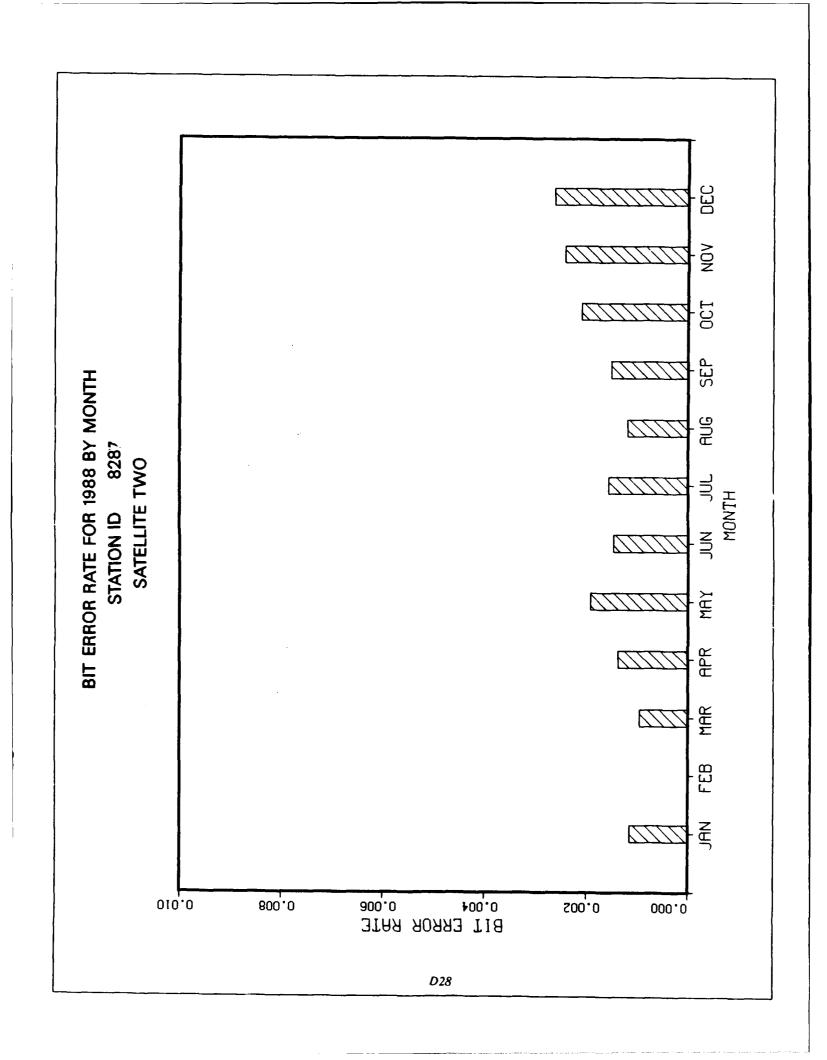


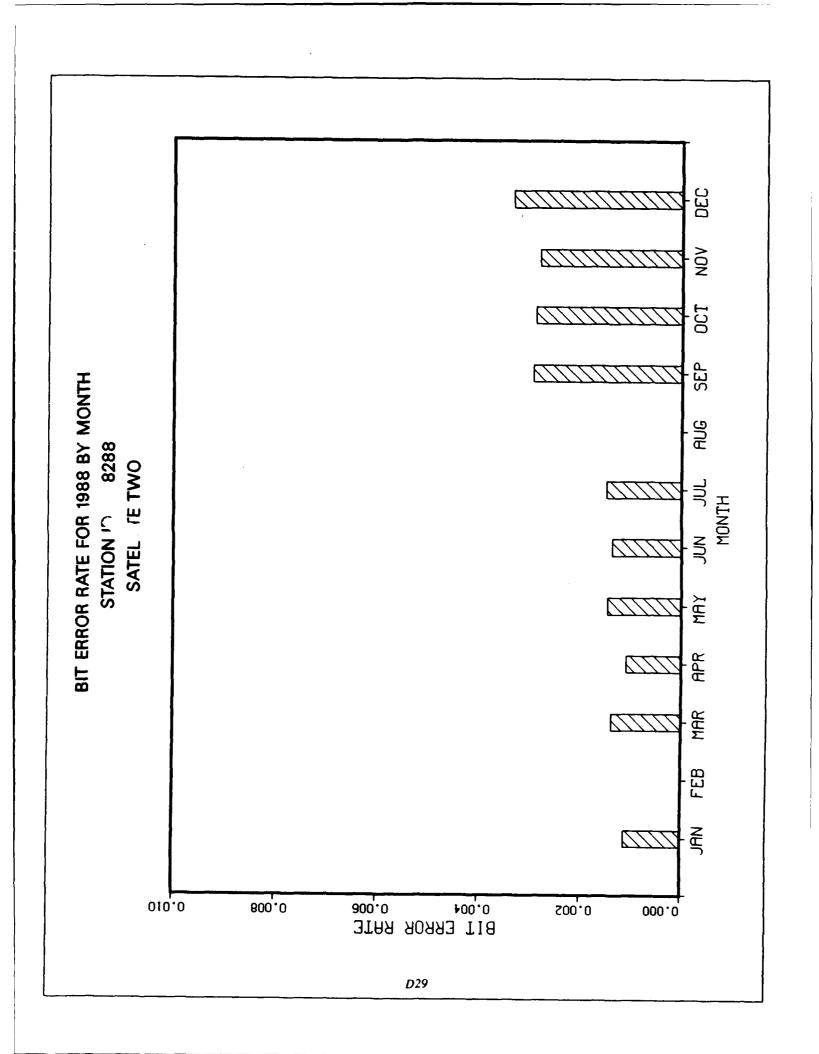


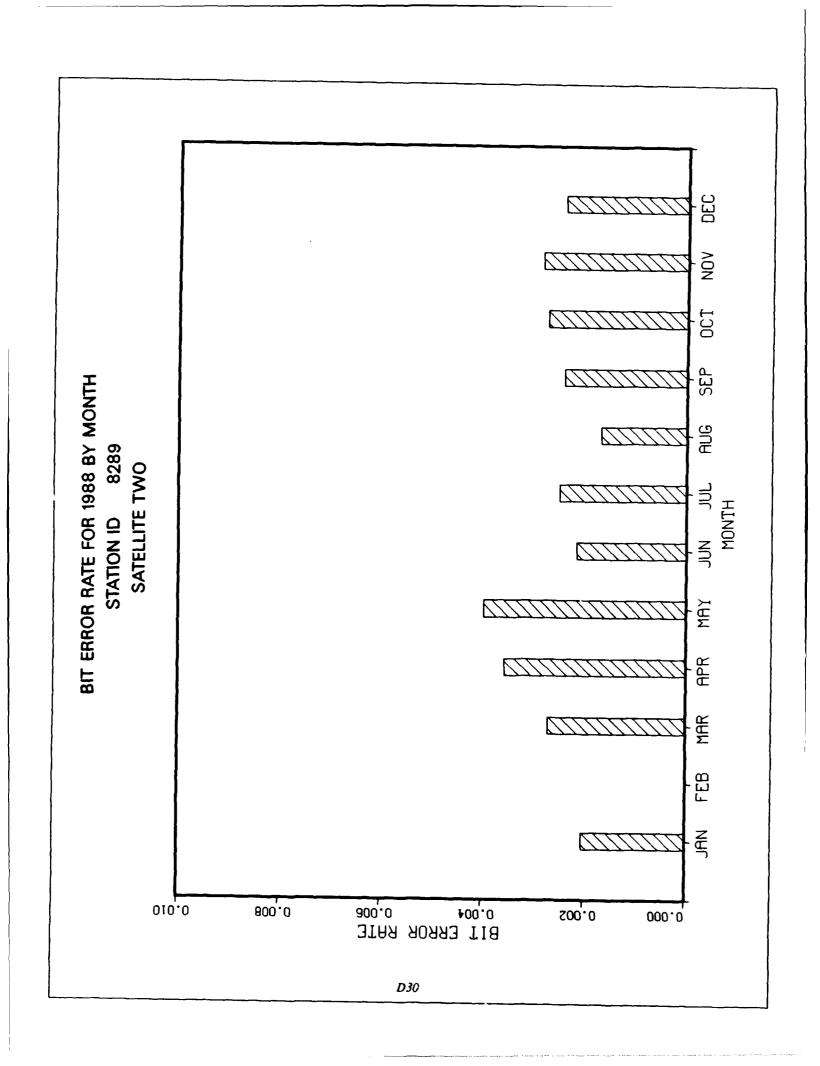


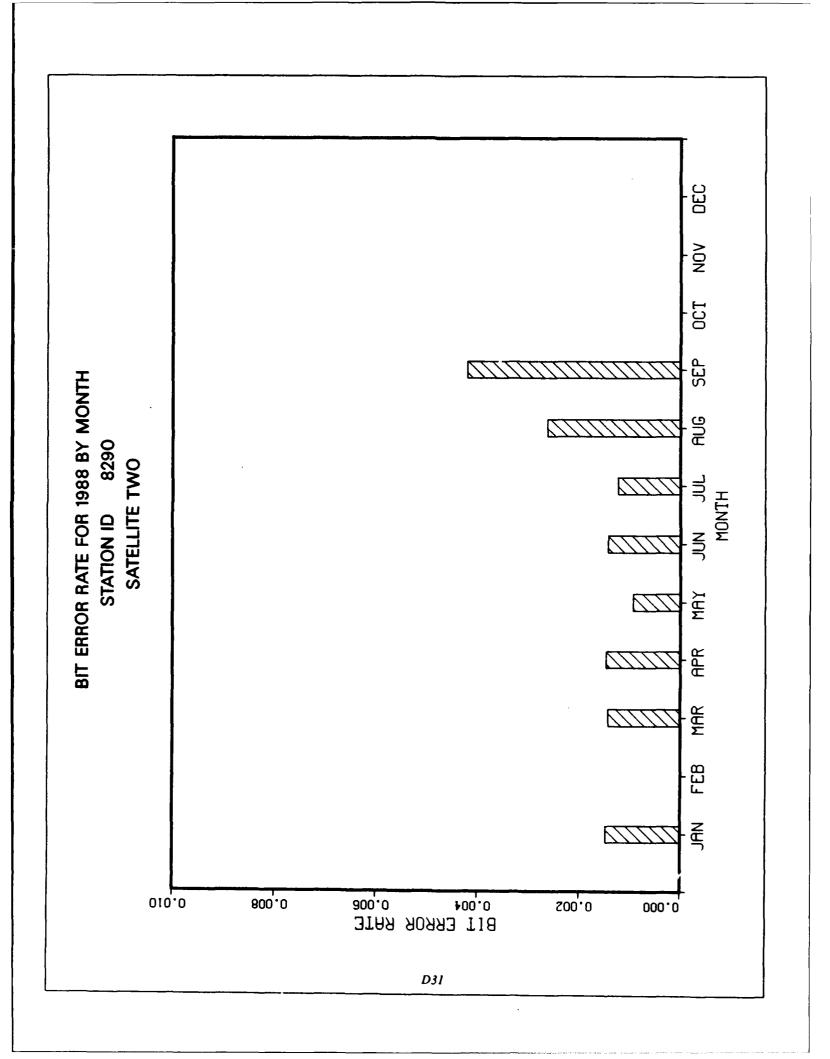


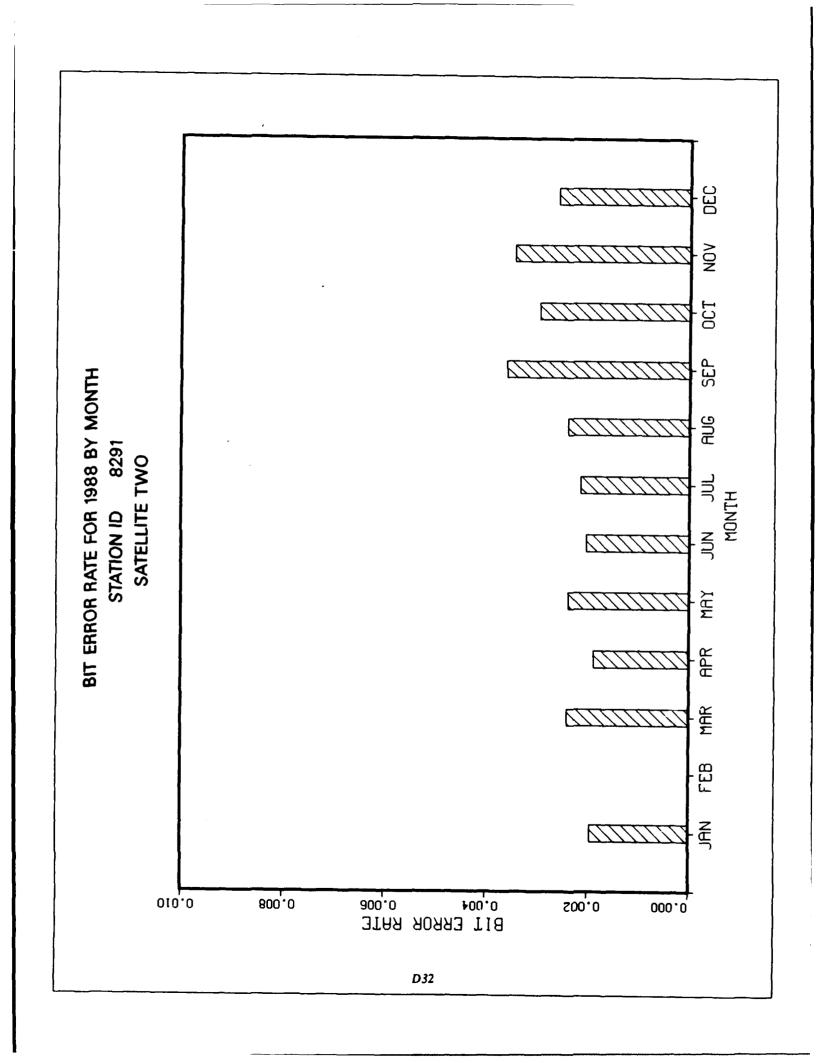


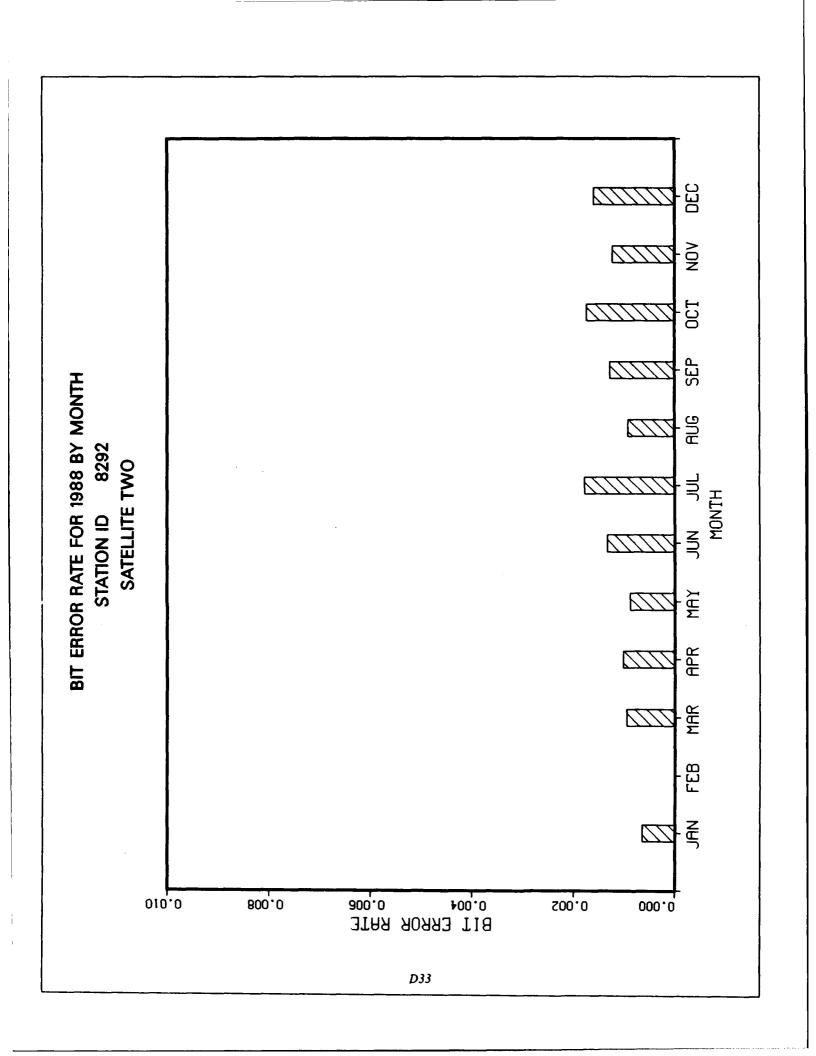


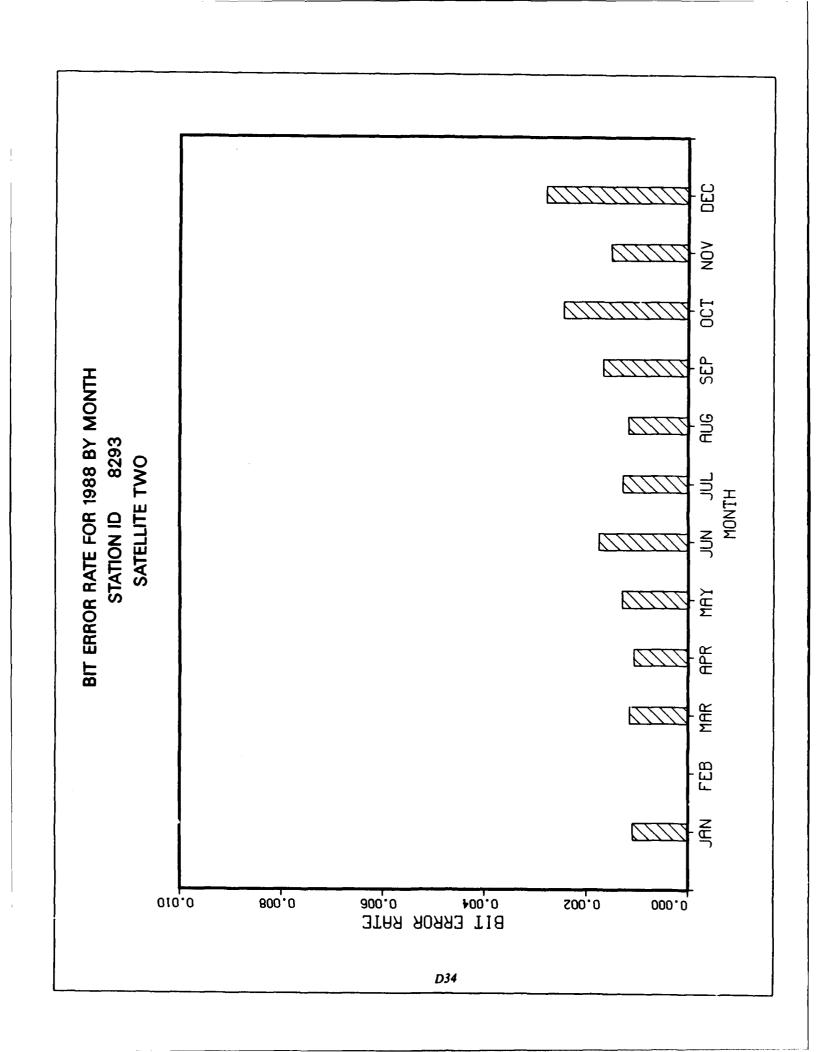


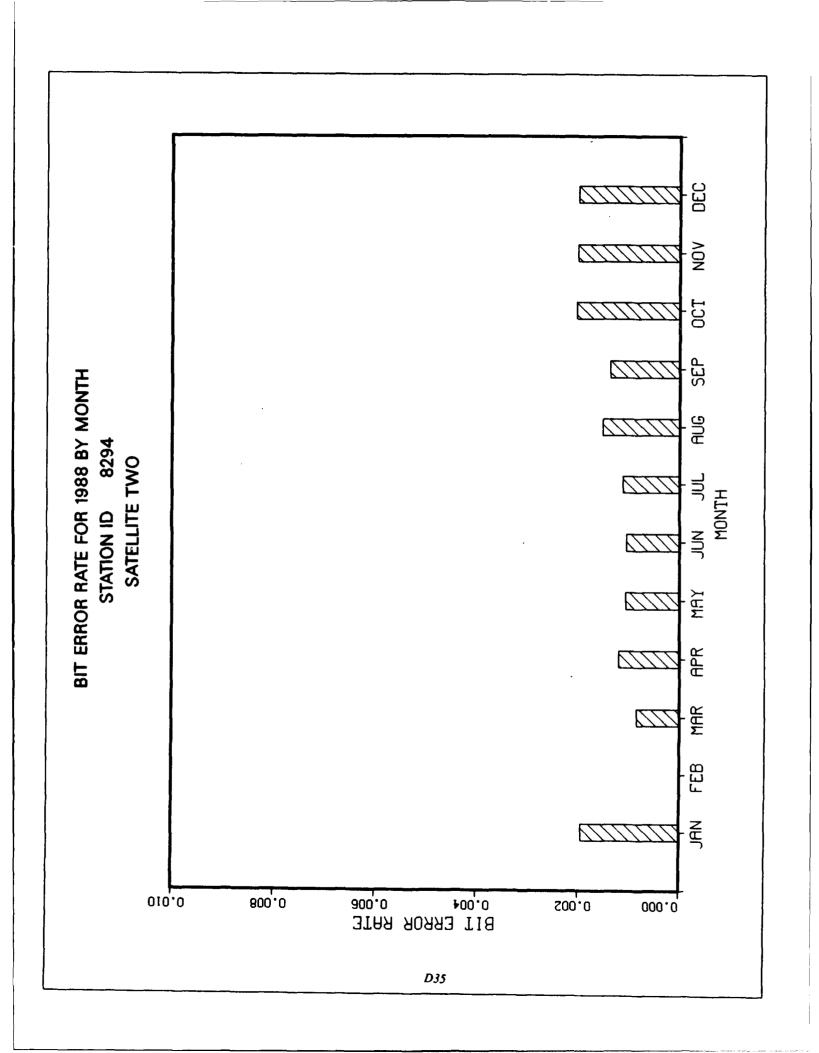


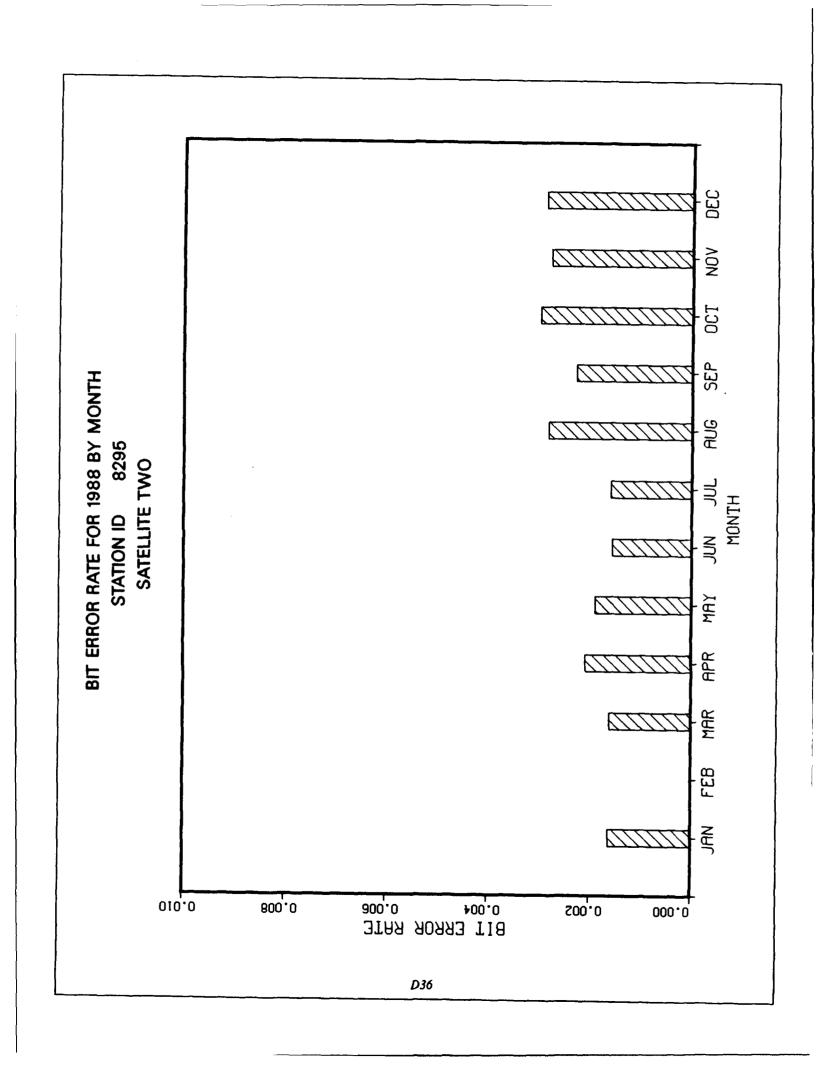


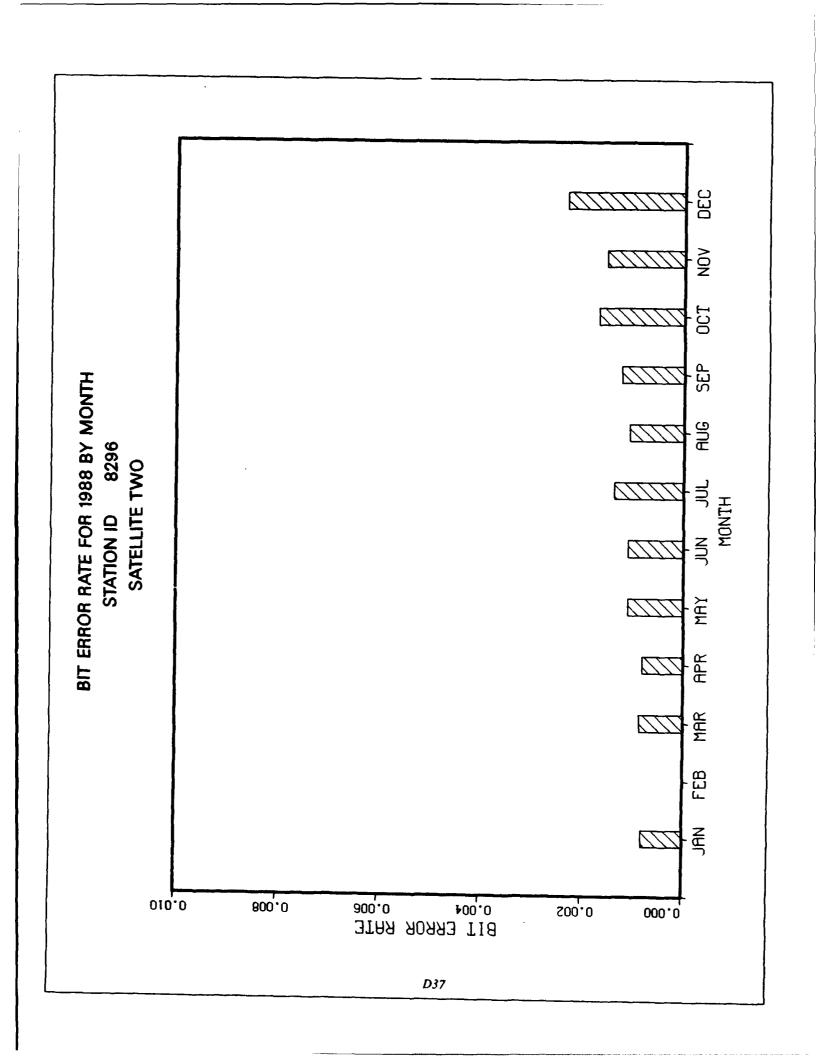


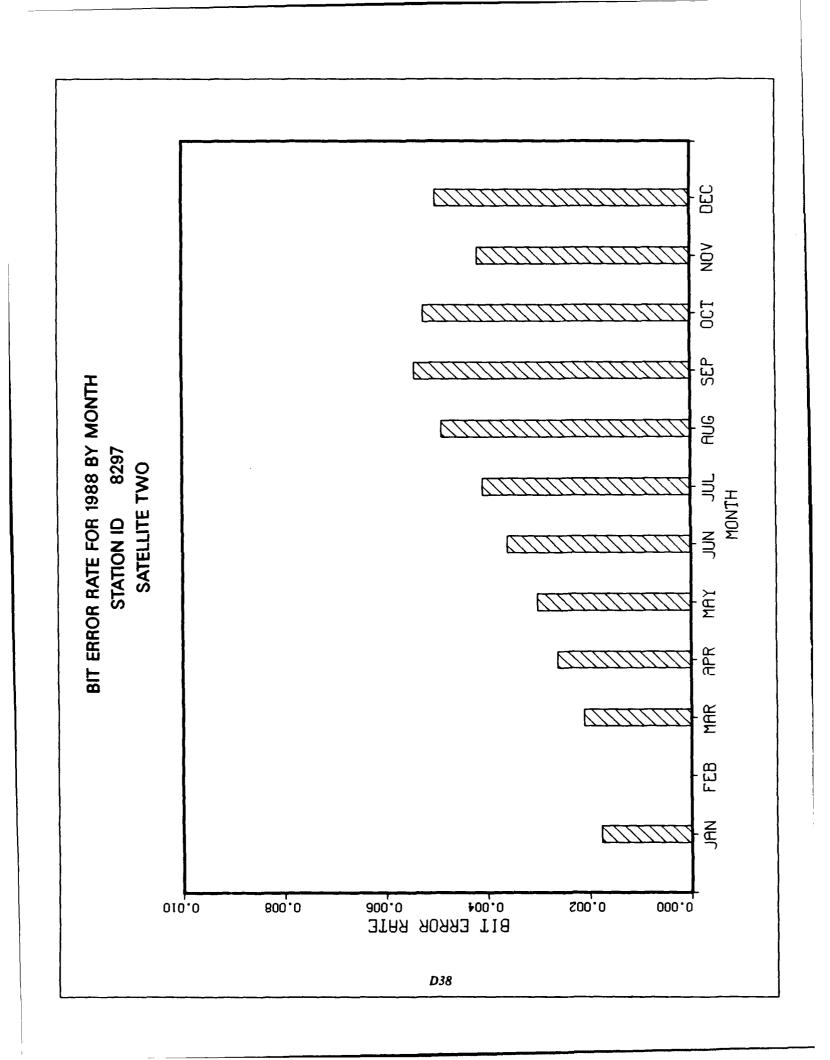


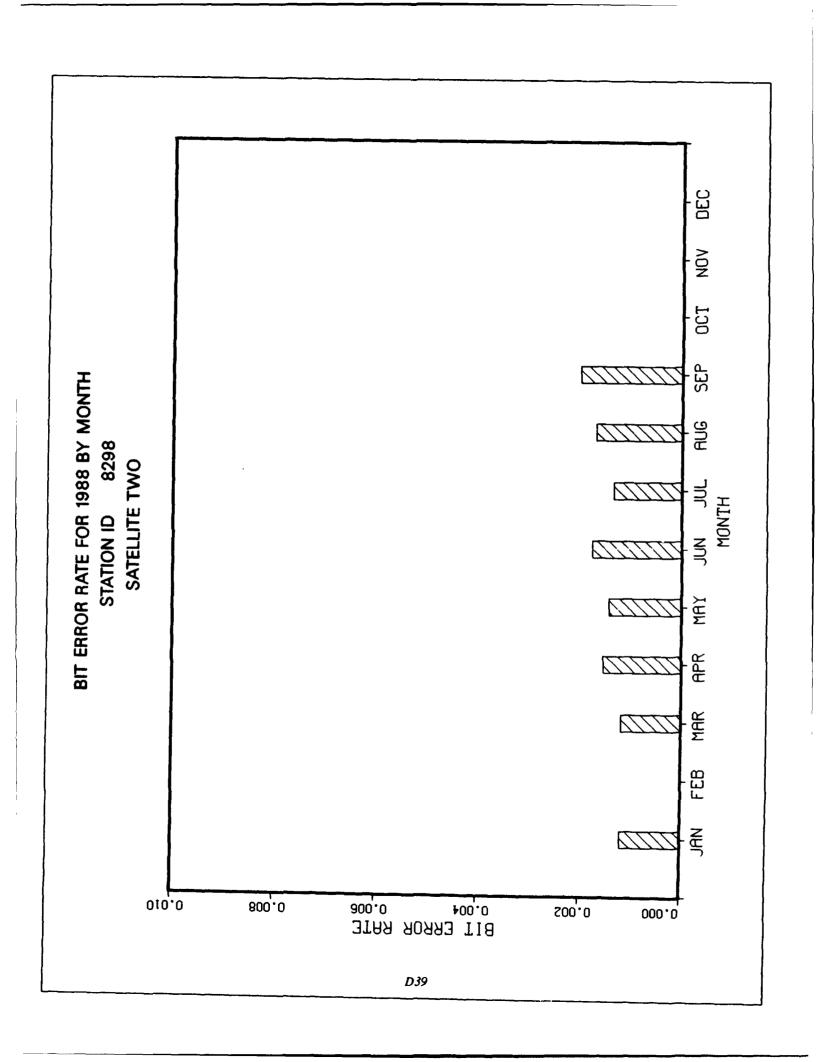


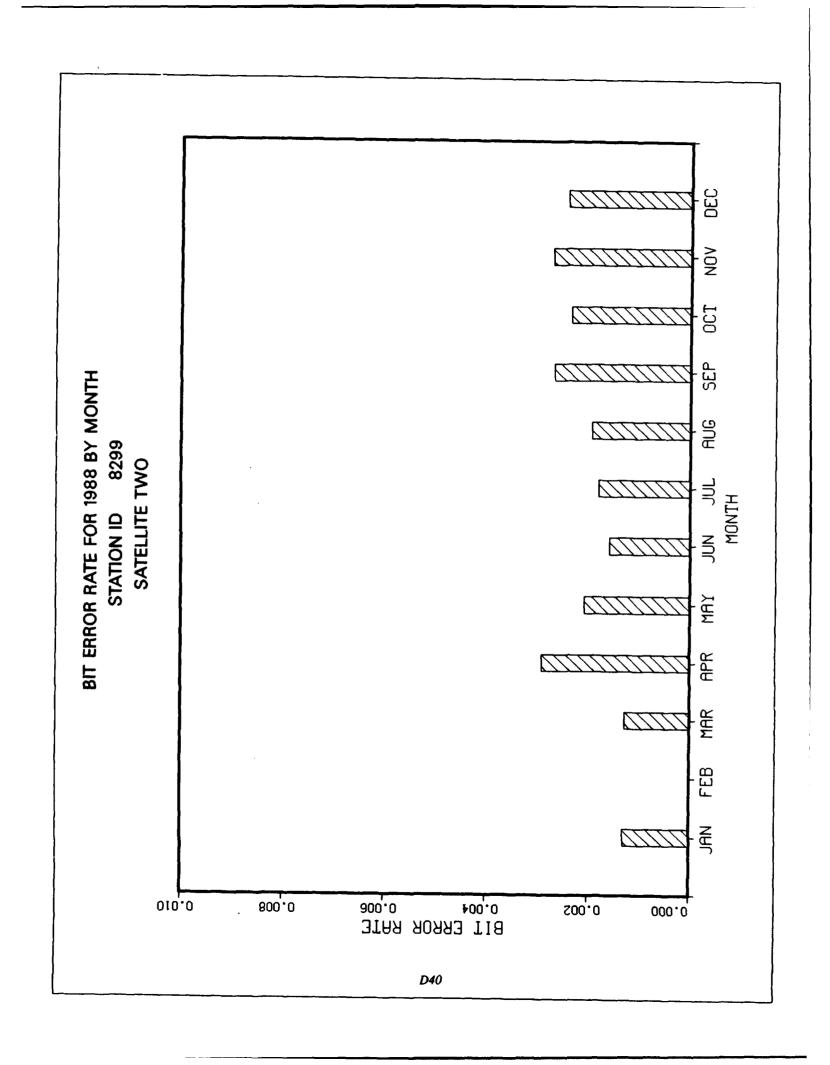


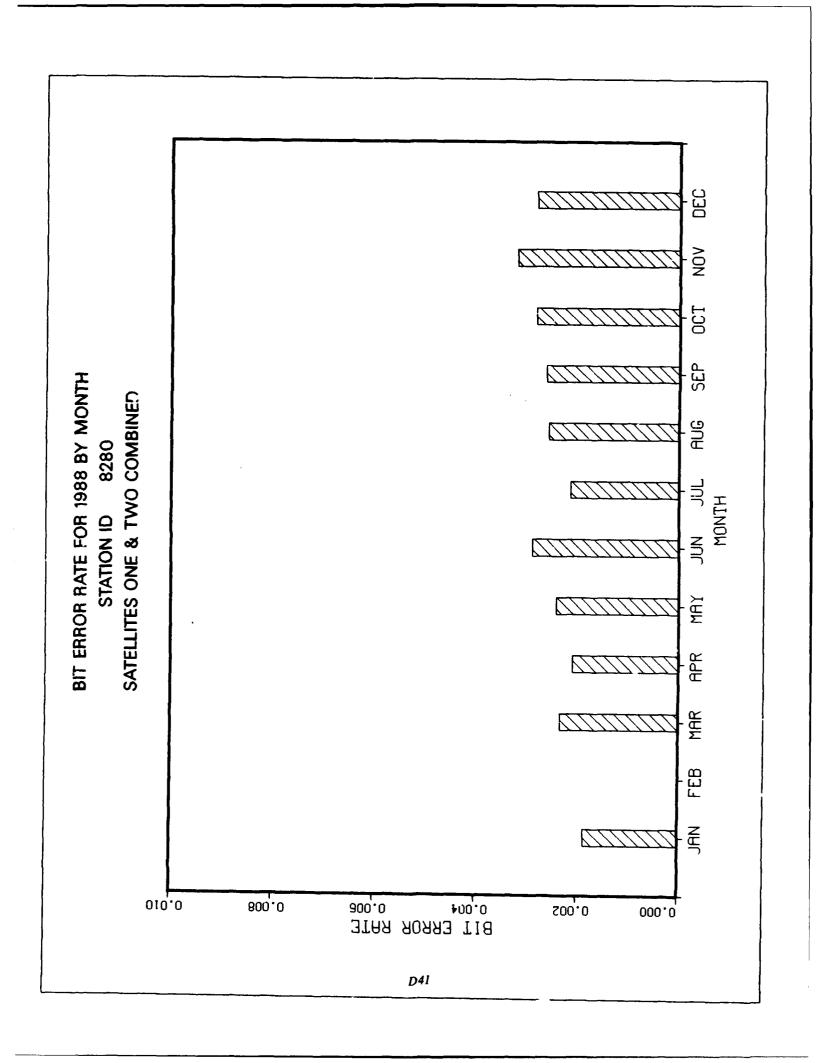


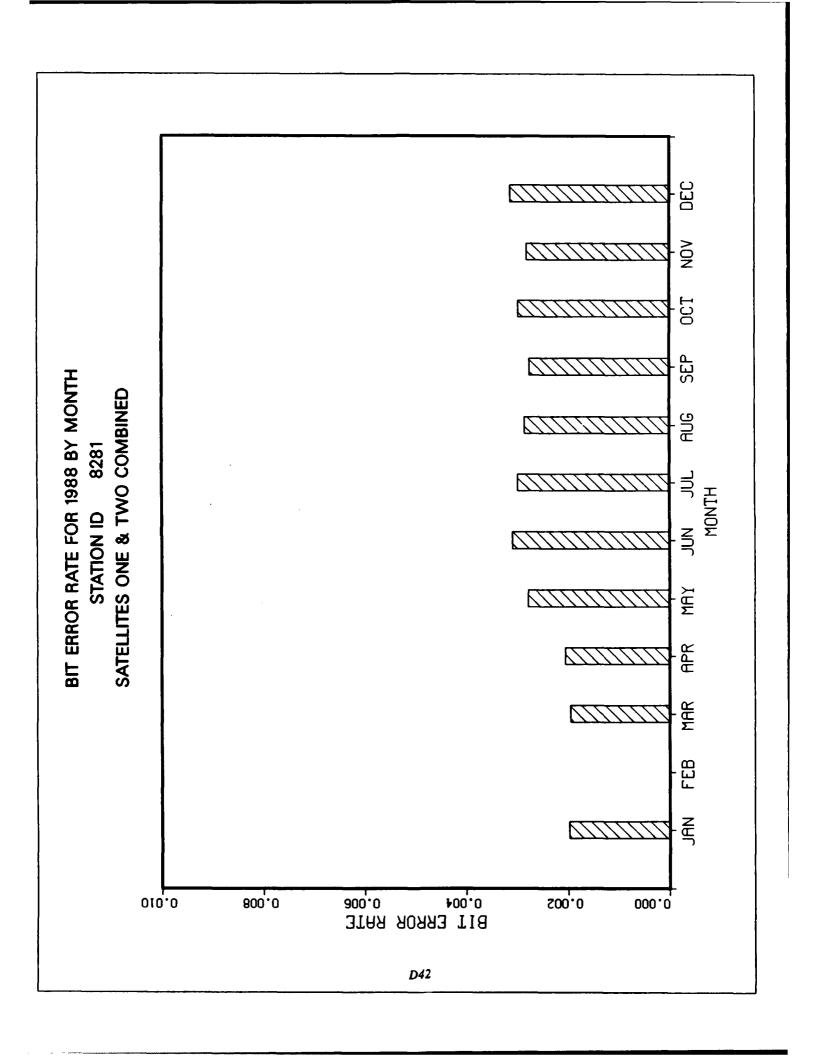


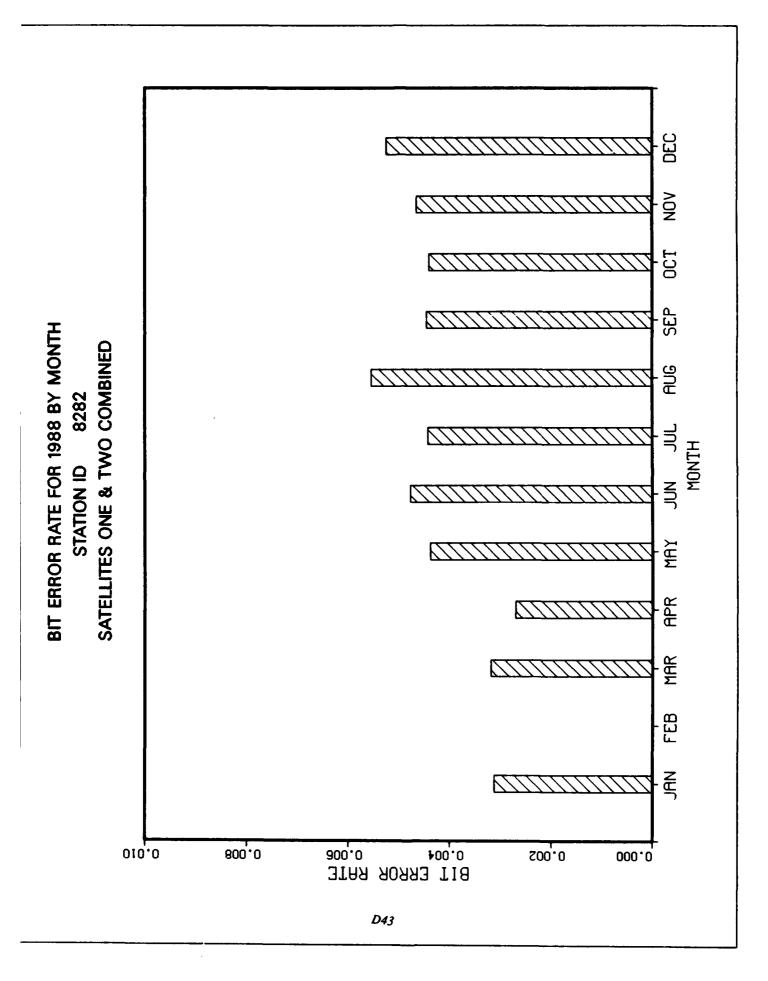


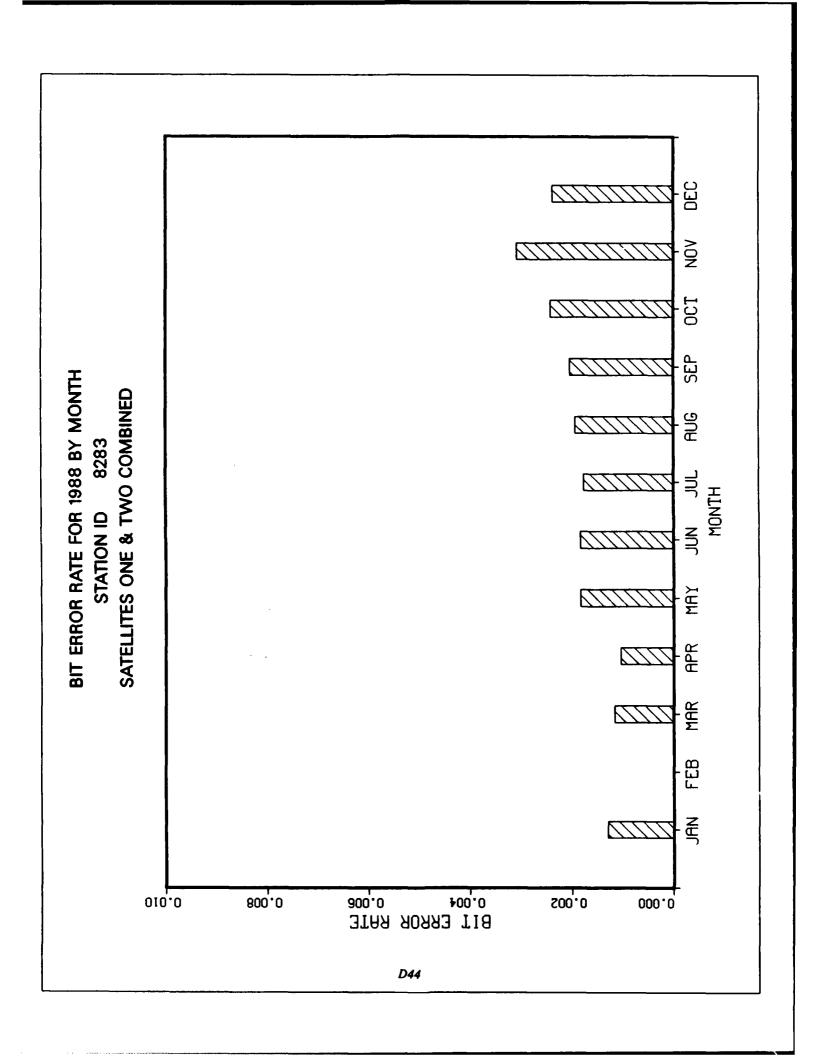


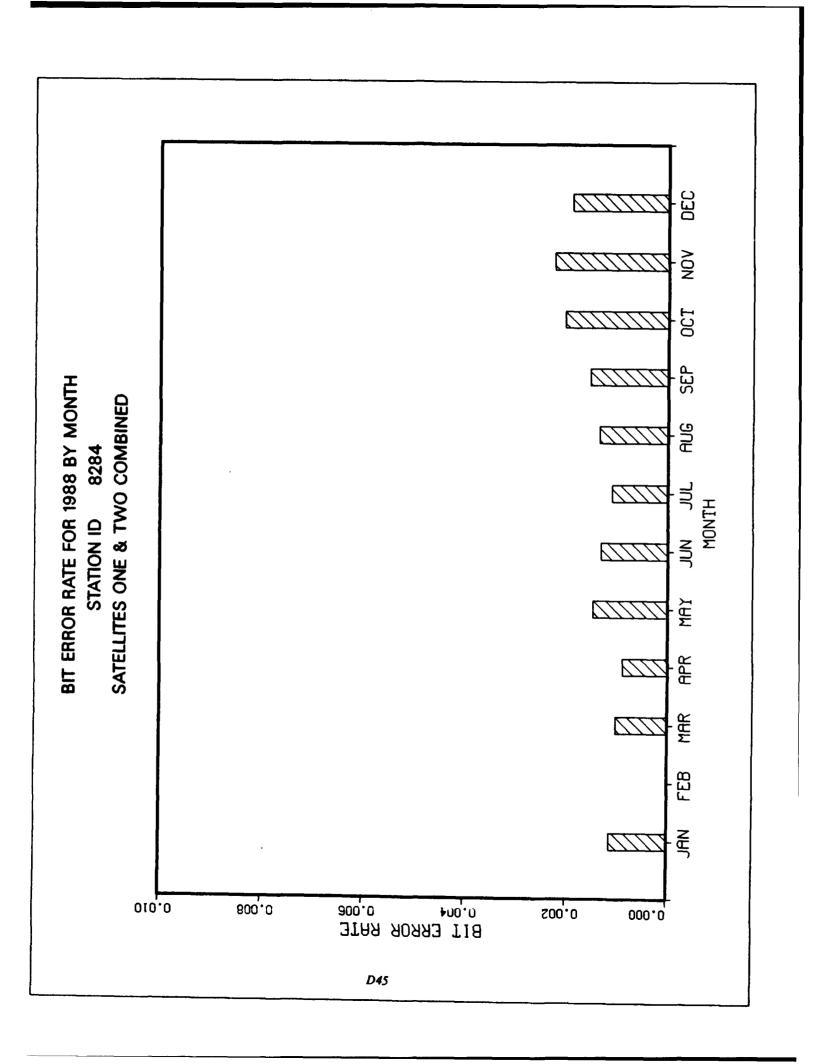


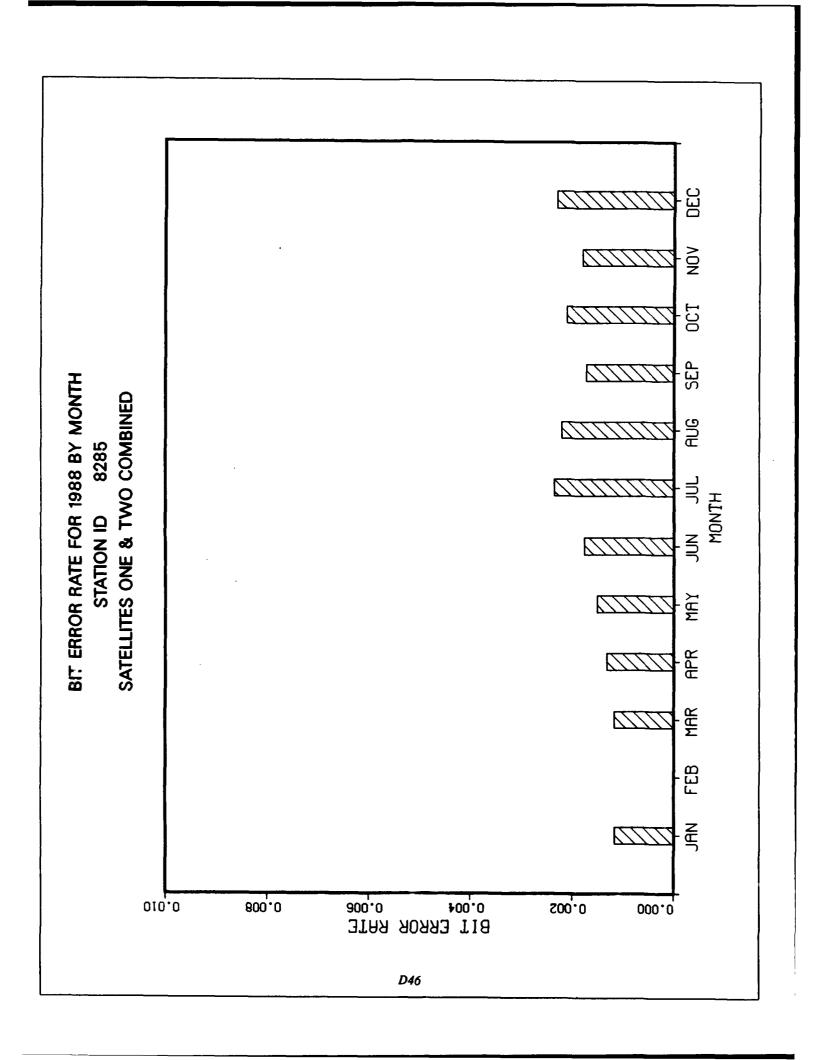


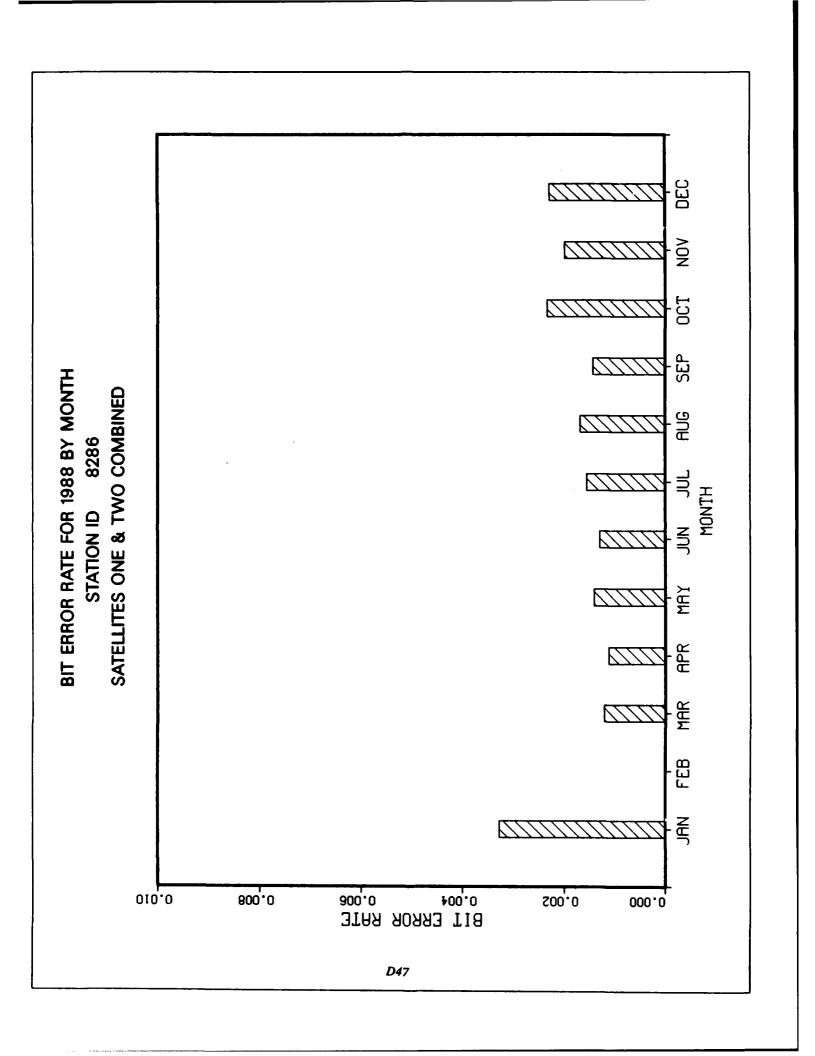


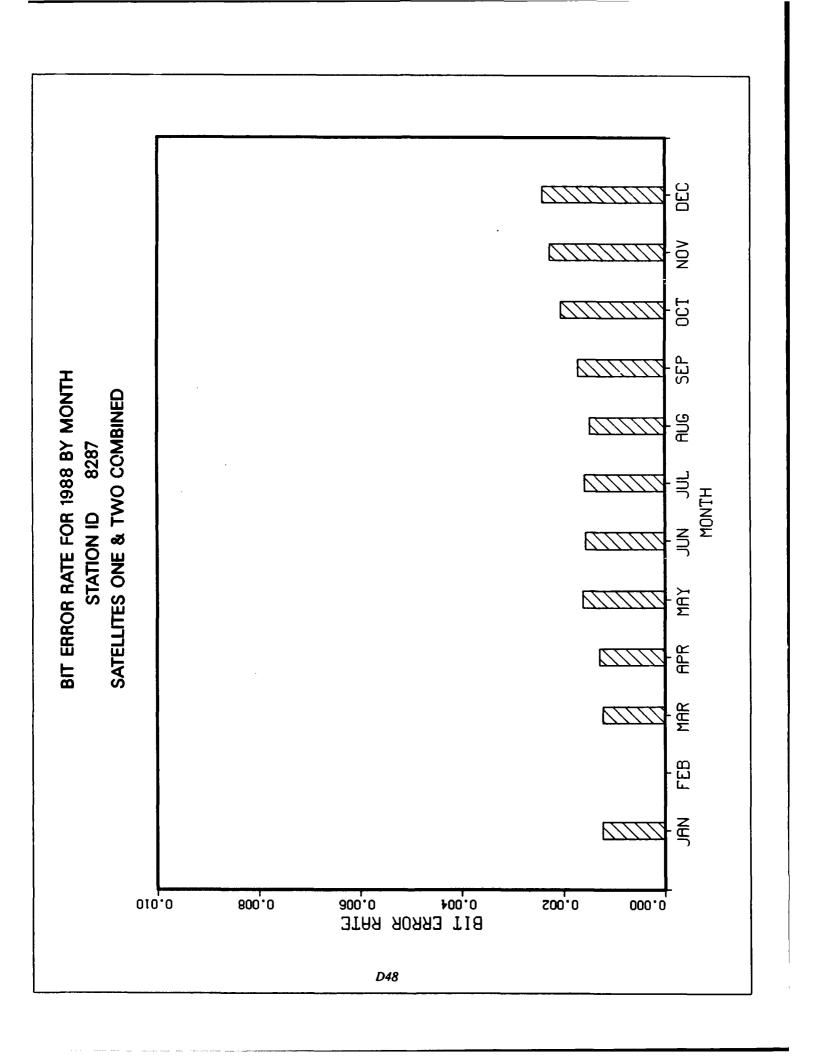


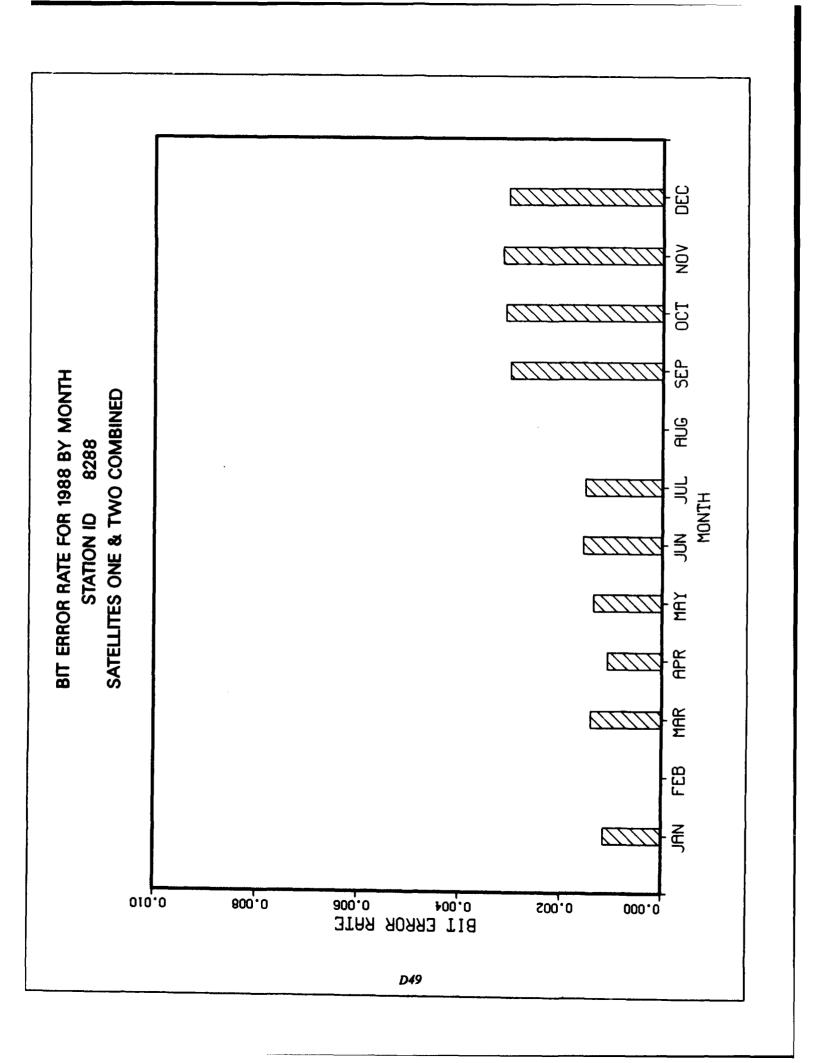


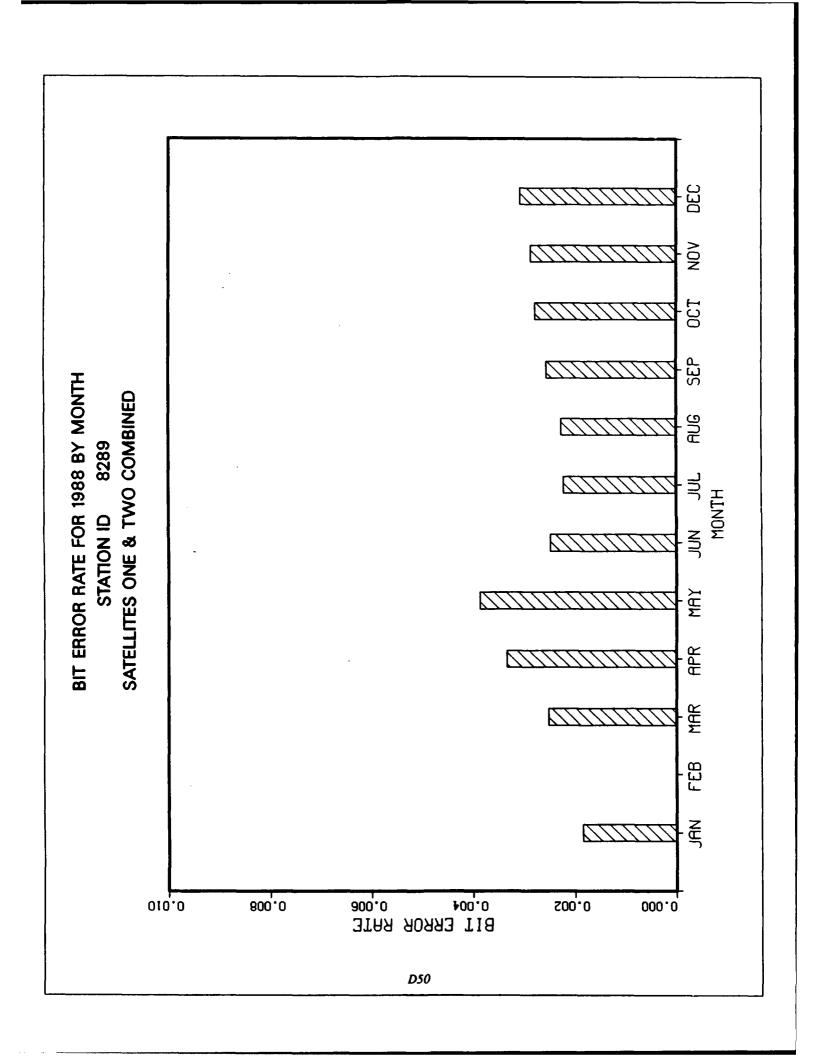


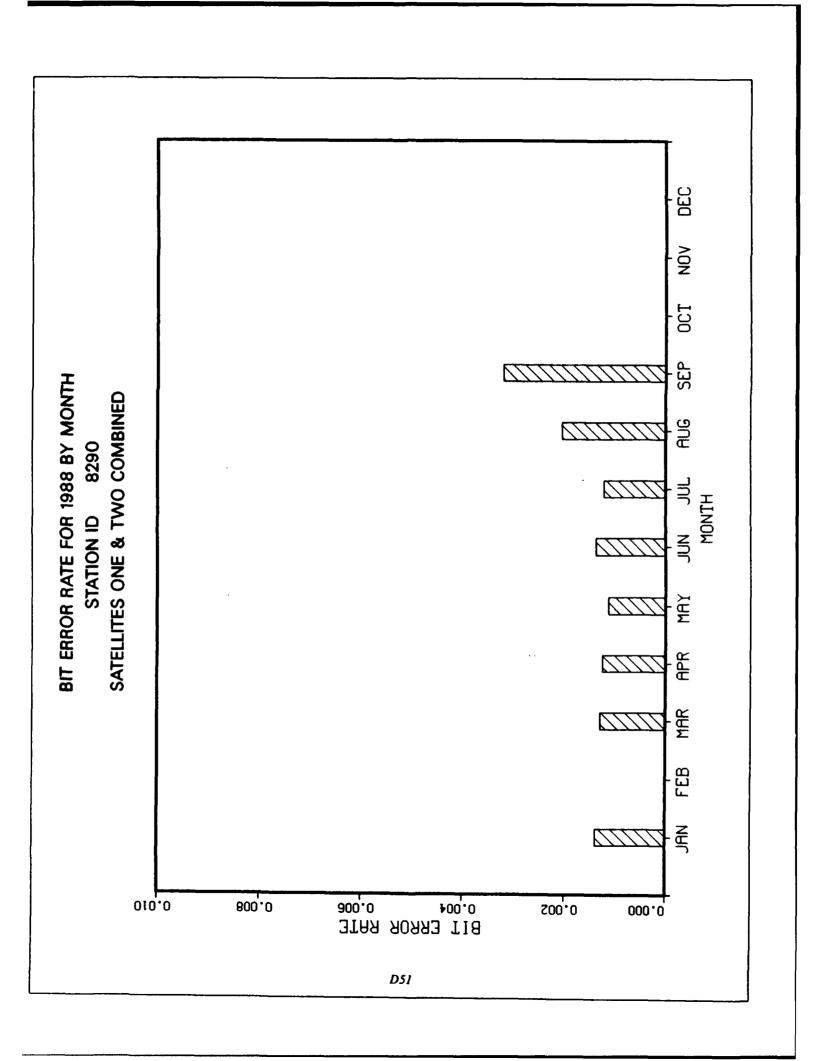


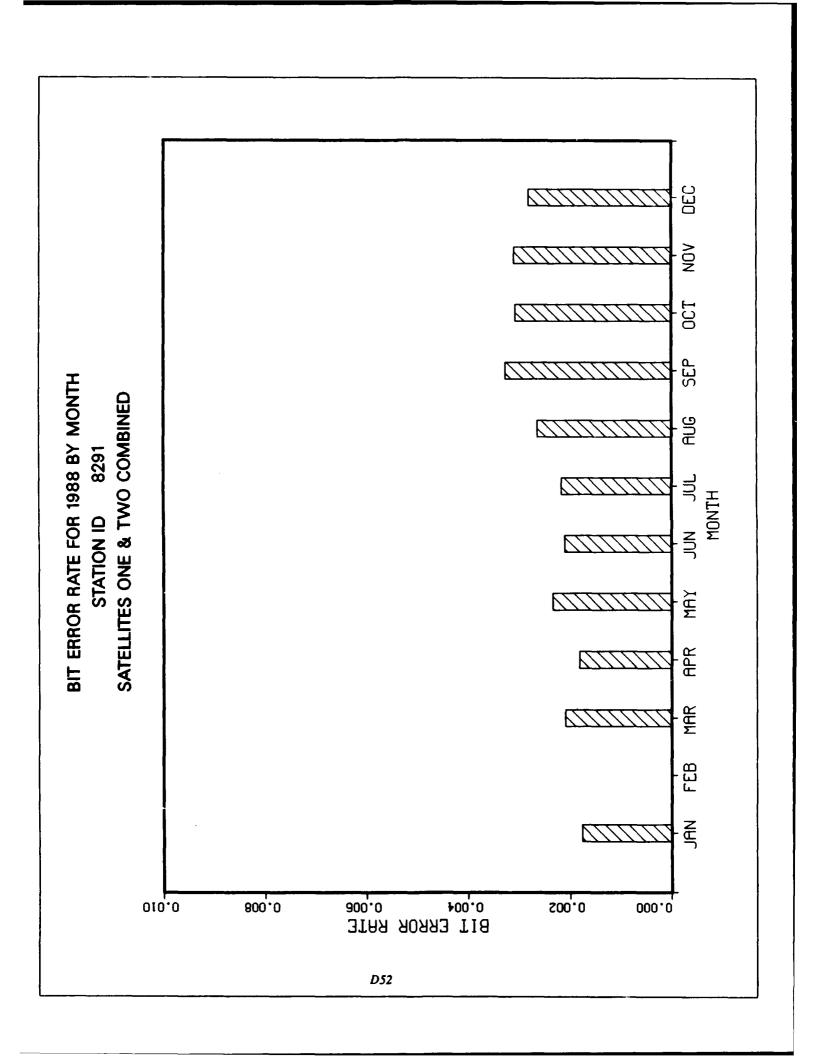


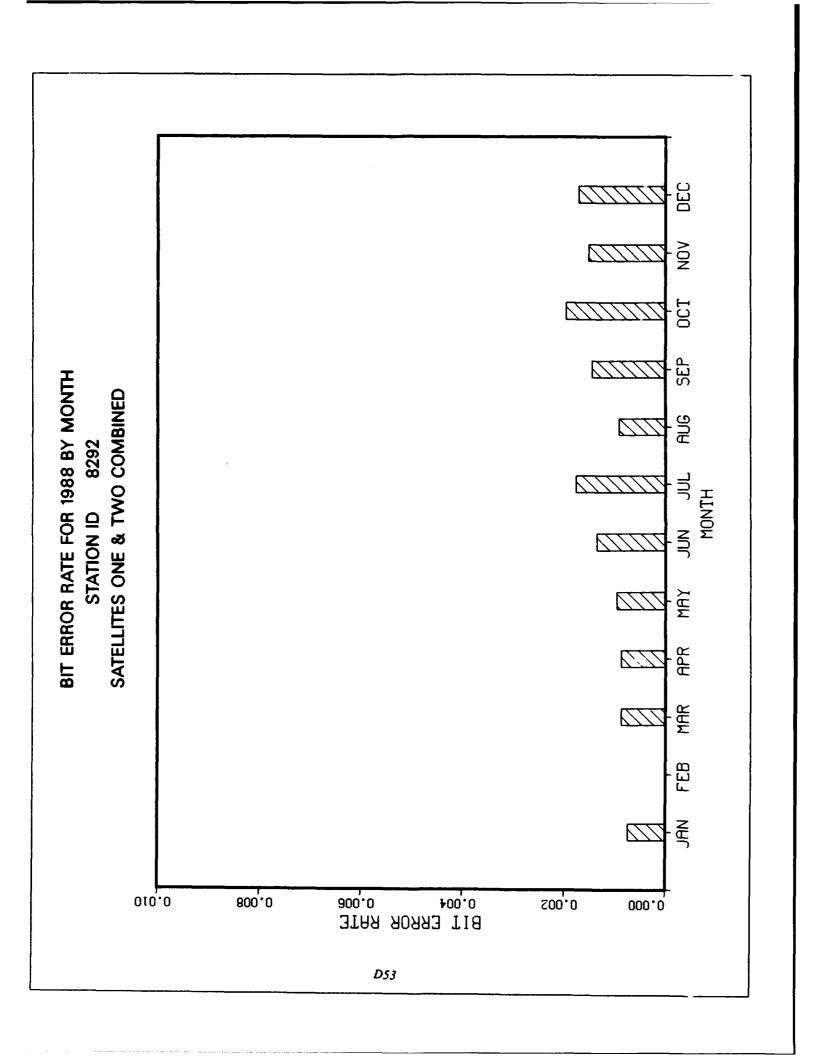


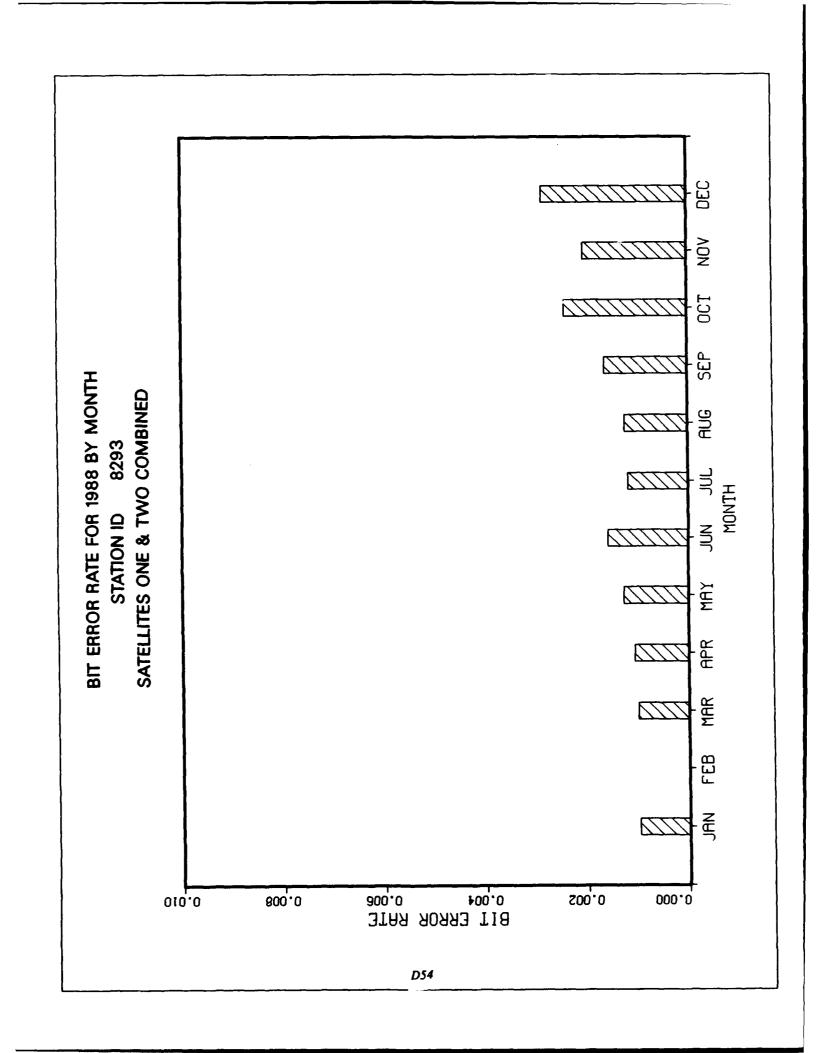


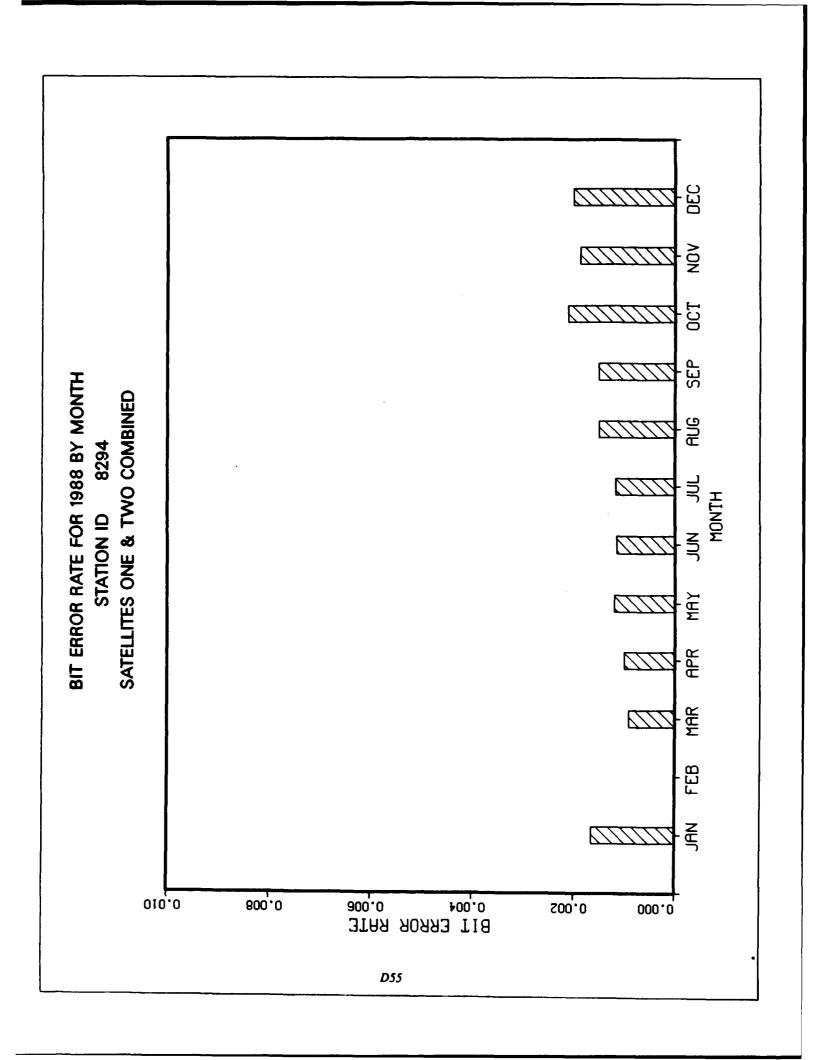


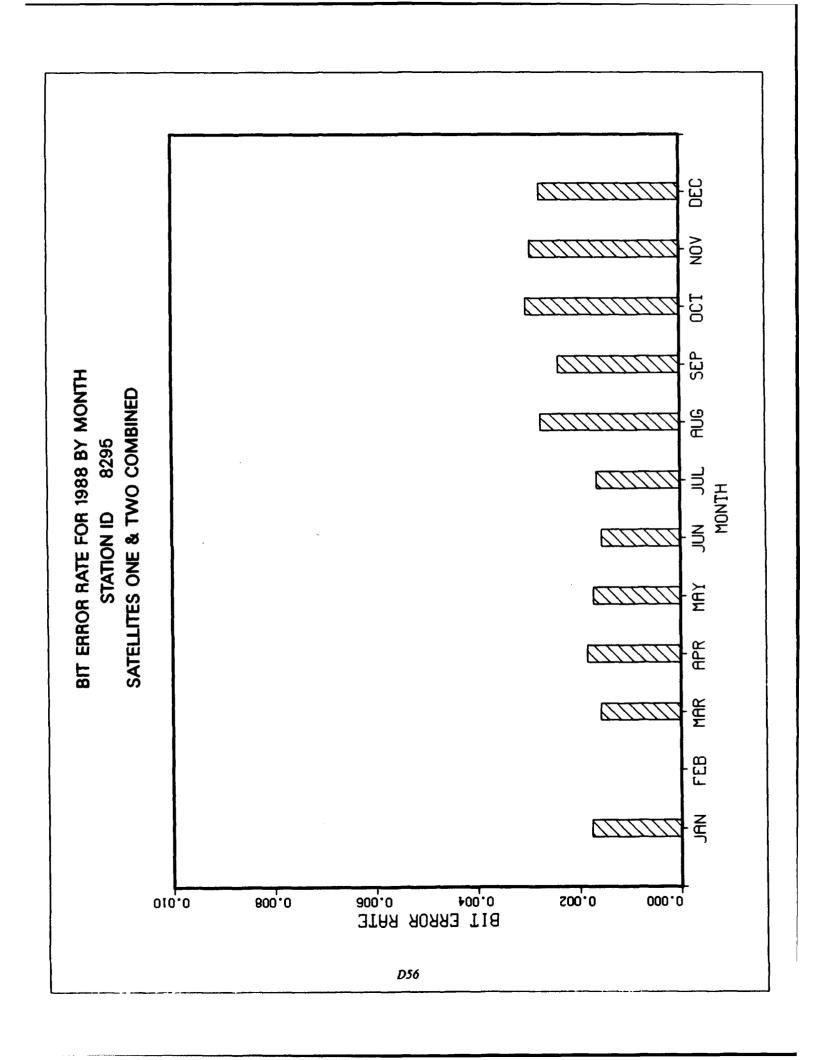


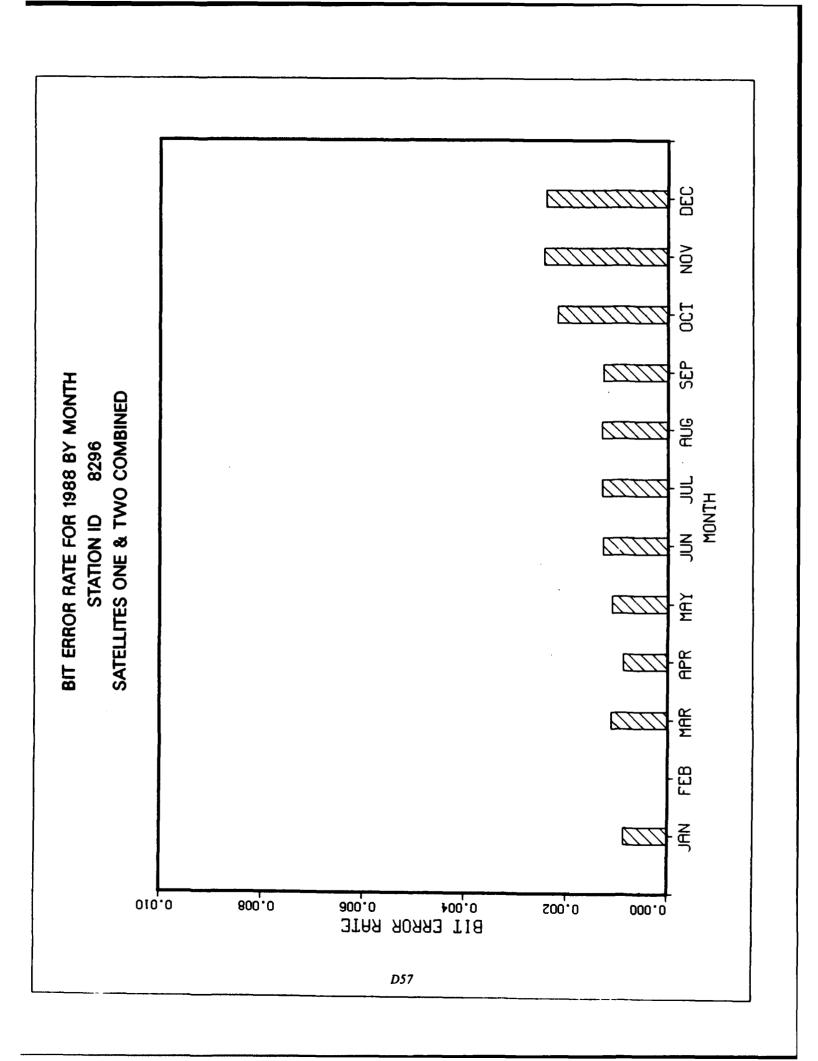


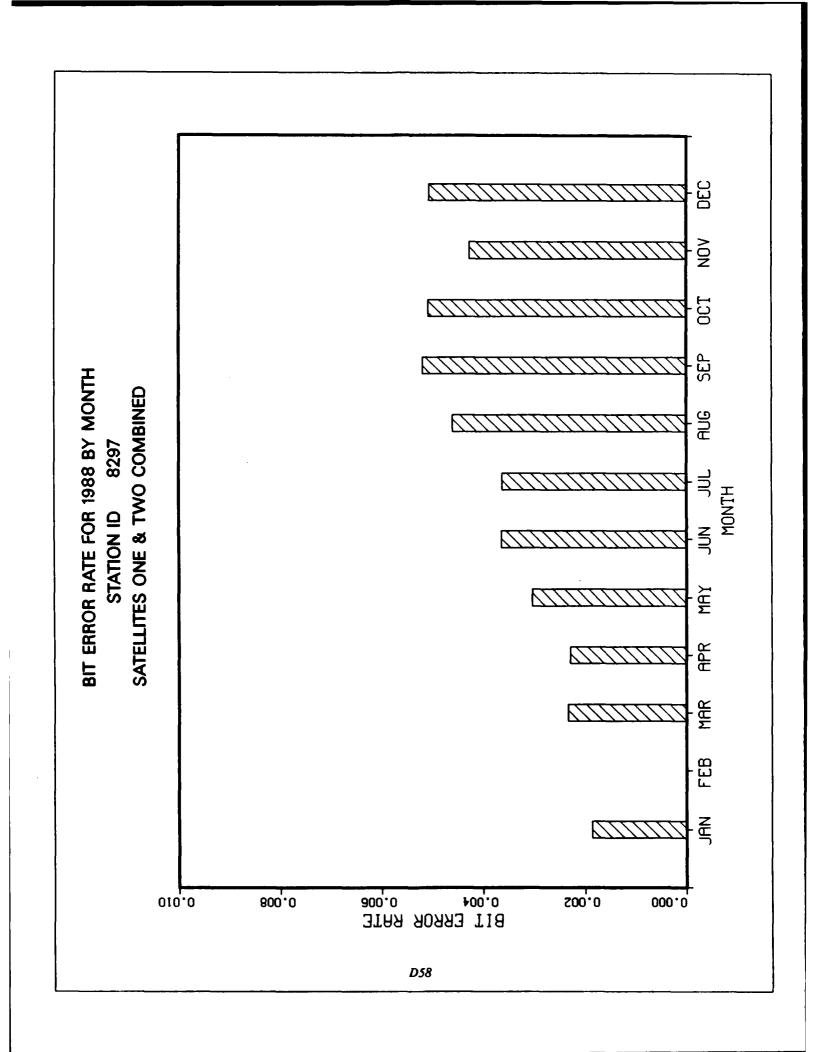


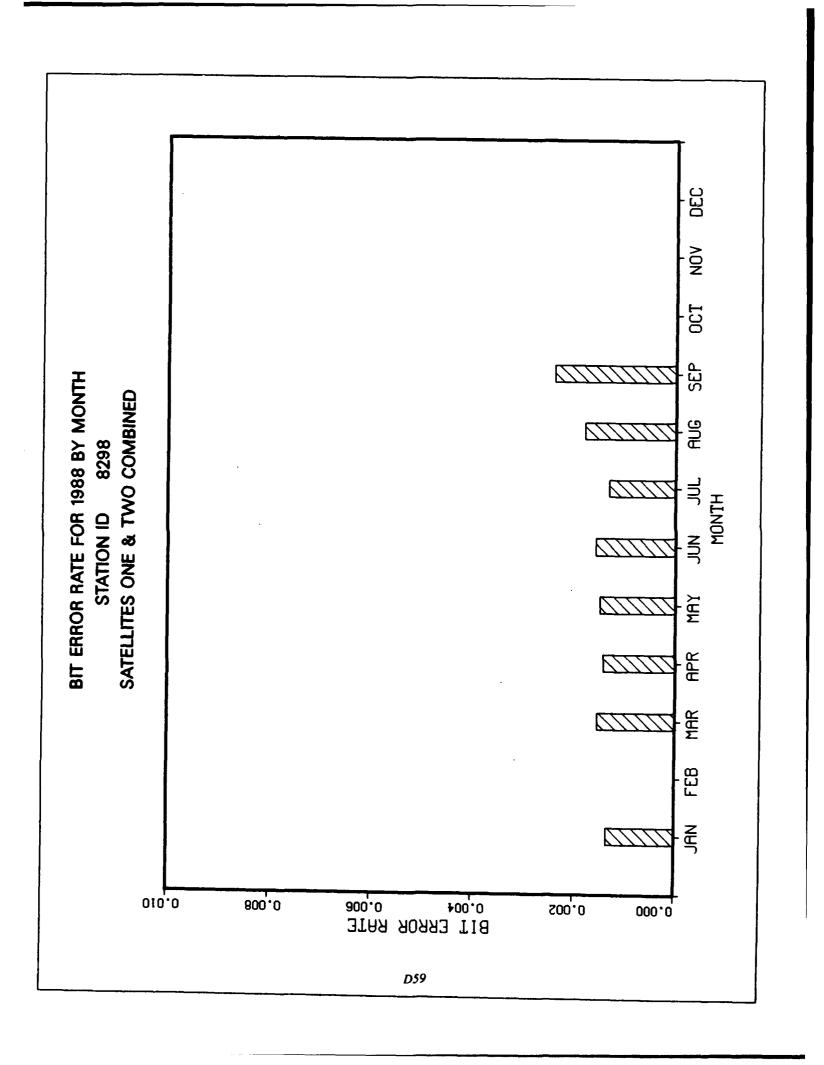


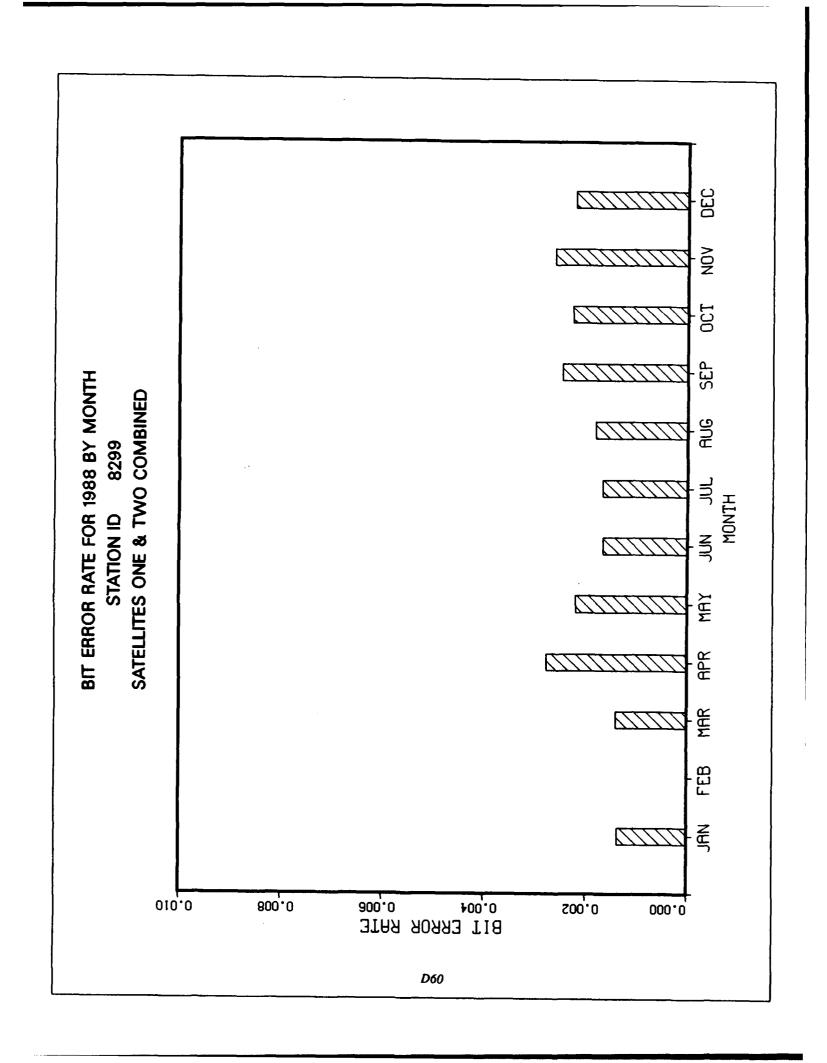


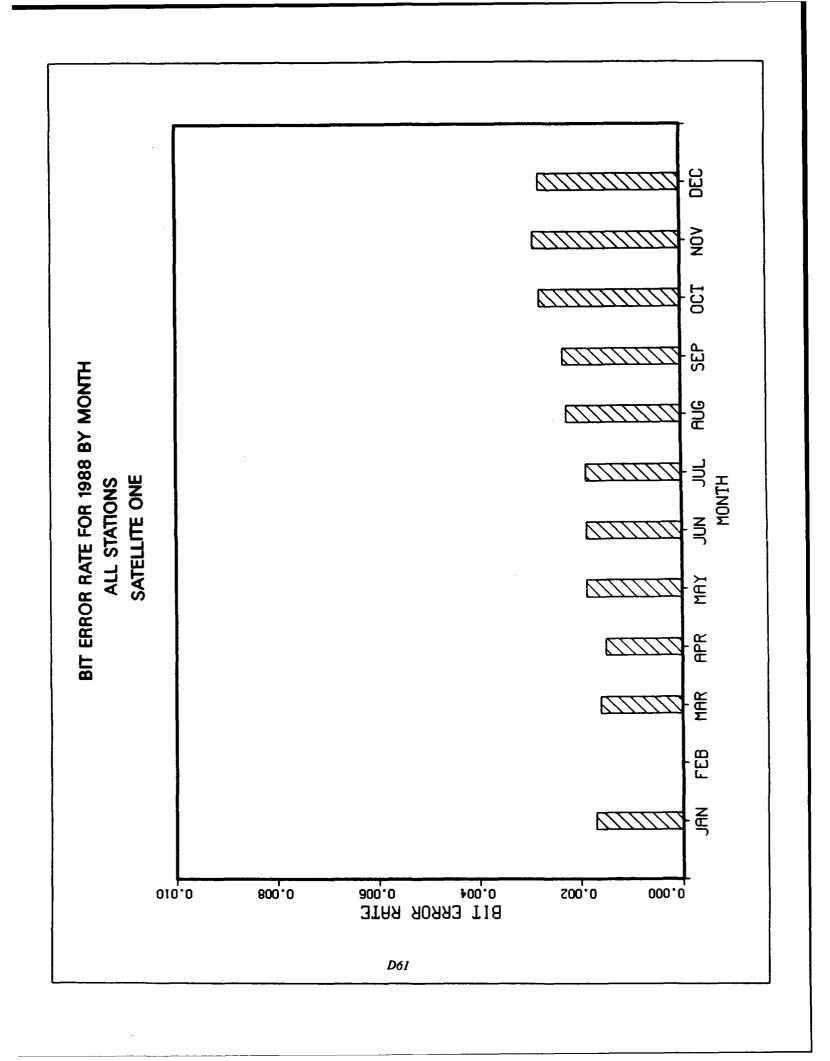


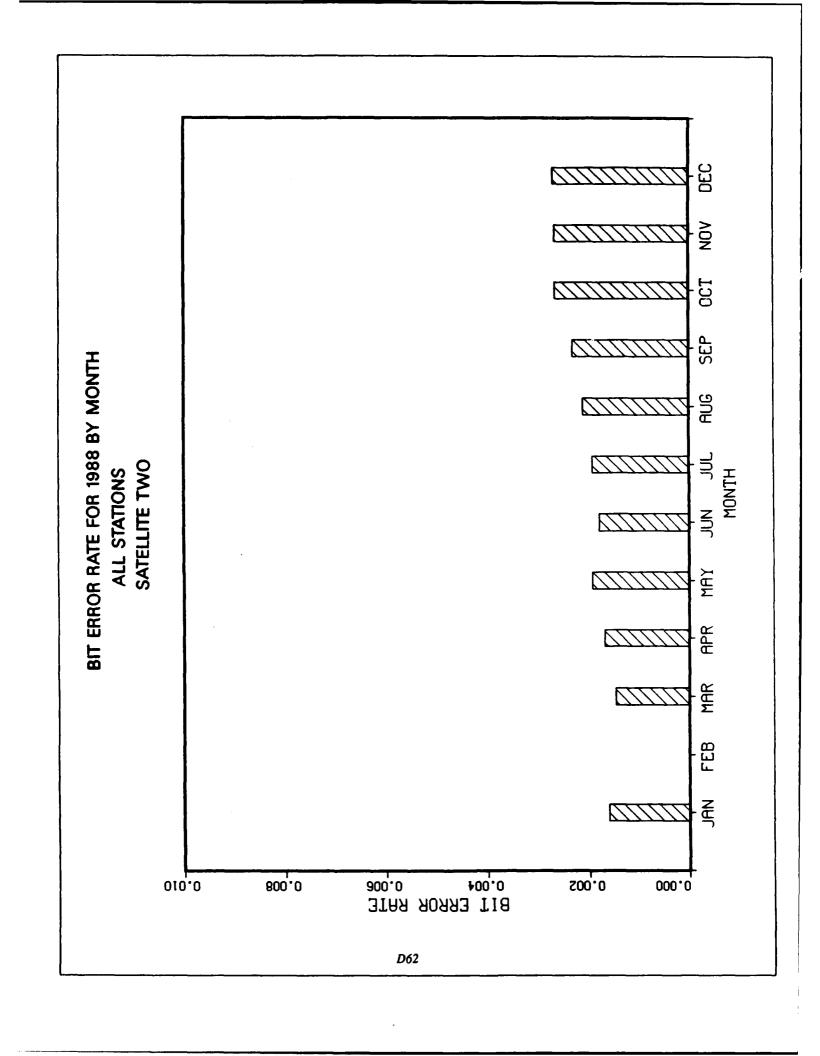


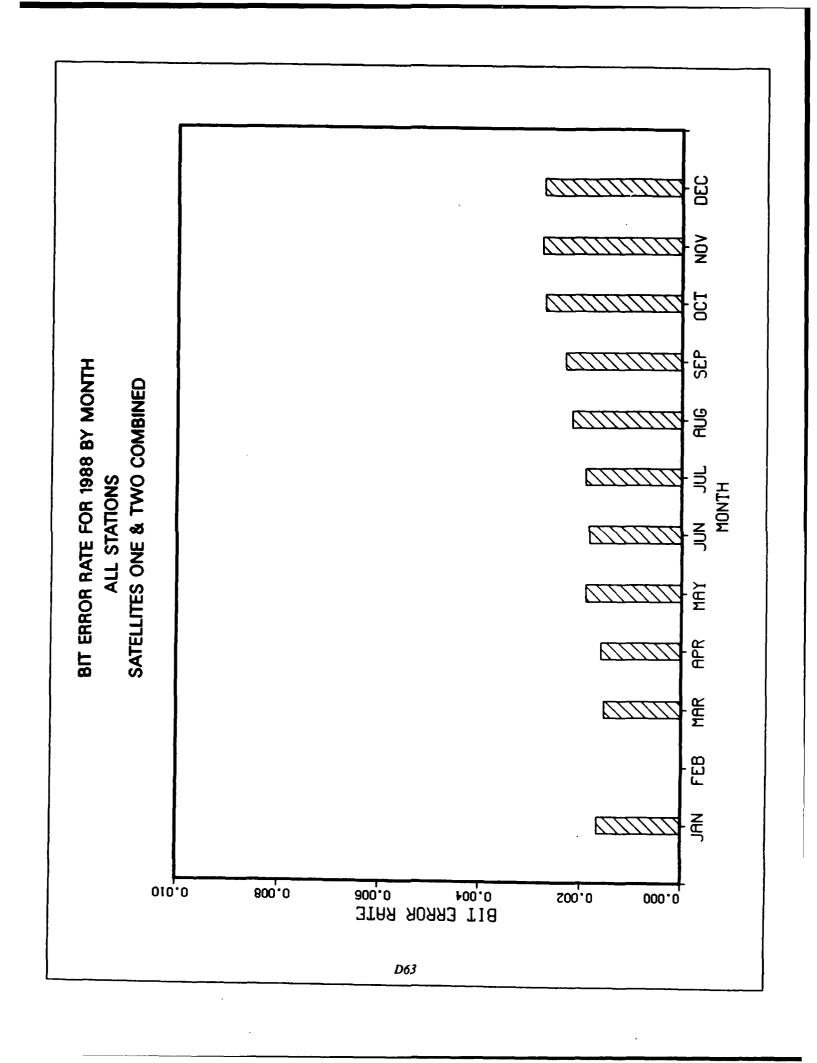






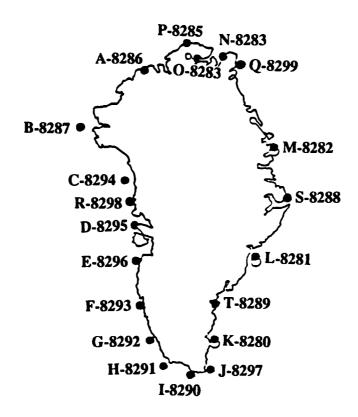




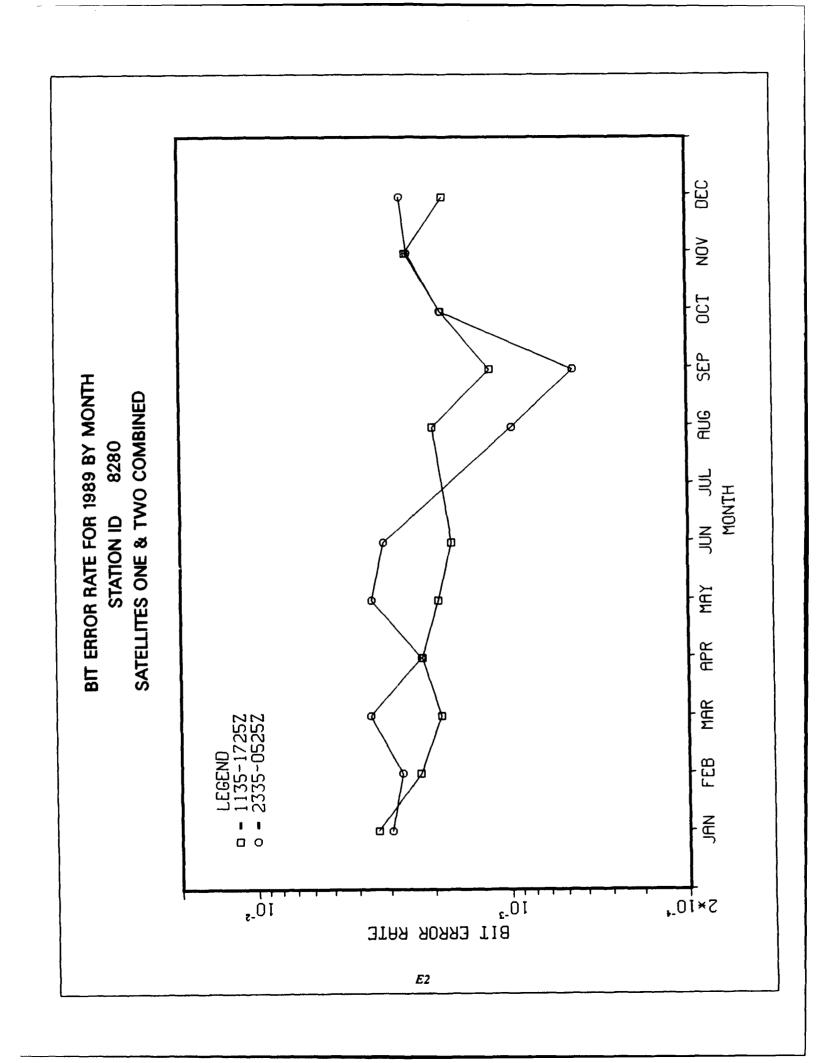


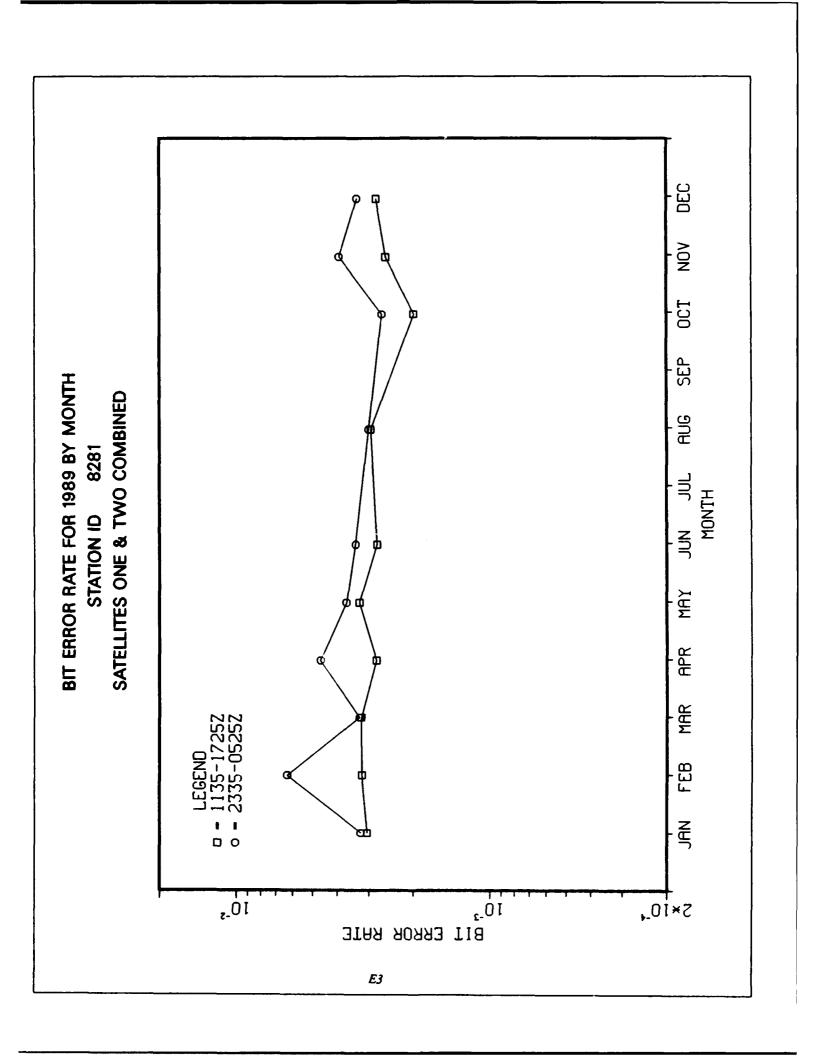
APPENDIX E

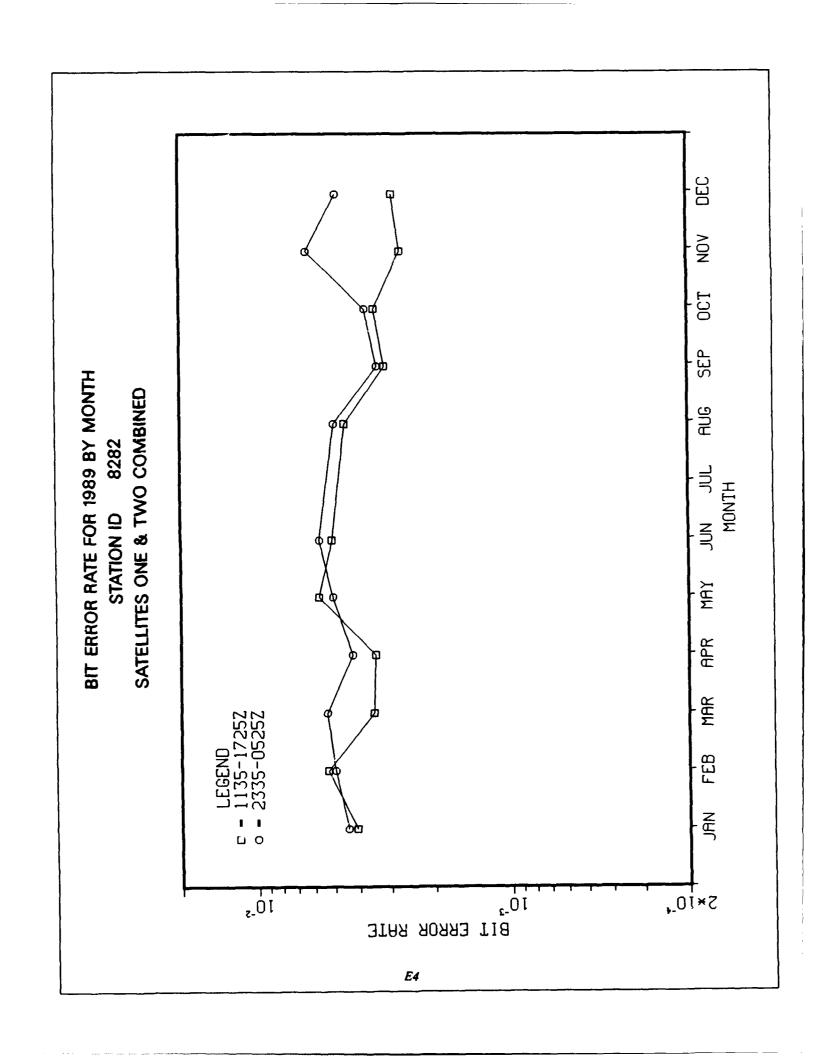
MONTHLY BIT-ERROR-RATE DATA FOR 1989



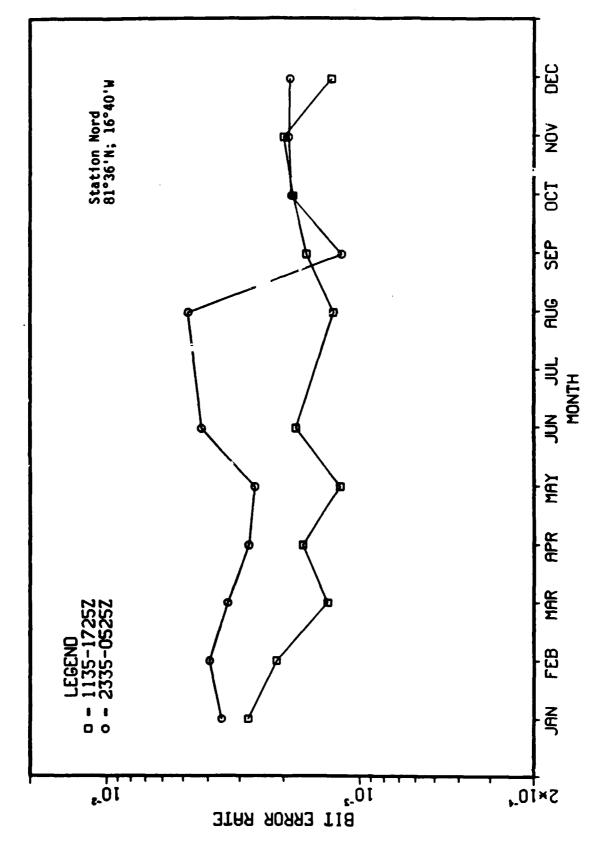
	Station	Location	WMO-NR	Argos-NR	Established
A-	Hall Land	81°44'N,59°00'W	04-207	8286	jul.1982
r	Carey Ser	76*38'N,73*00'H	04-203	8187	Aug. 1979
C-	Edderfugleøer	74°02'N,57°49'W	04-208	8294	Sep.1981
D-	Mugssvaq	70°41'N,54°37'W	04-214	8295	Aug. 1982
E-	Agto	67*47'H,53*58'W	04-228	8296	Aug. 1983
F-	Siormiik	65*01'H,52*33'W	04-242	6293	Jun.1983
G-	Frd.håbs Isblink	62°34'N, 50°25'W	04-253	6292	Jun.1982
H-	Munerssuit	60*46'N,48*25'W	04-266	6271	Jun. 1981
I -	Anglasoq	59*59'N,45*12'W	04-285	8290	Jun.1981
J-	Prins Chr.sund	60*02*N,43*07*W	04-390	8297	Okt.1982
K -	Ikermierssuk	61*56'N,42*04'W	04-381	8280	Aug.1978
L-	Aputiteq	67°47'N, 32°18'W	04-351	8281	Aug.1978
M -	Daneborg	74*18'N, 20*13'N	04-330	8282	Aug.1978
N-	Station Word	81-36'N, 16-40'W	04-312	8283	Sep.1979
0 -	Kap Harald Holtke	82*09'N, 29*53'W	C4-305	8284	Aug.1979
P-	Kep Morris Jessup	83*40'N, 33*22'W	04-301	6265	Jul.1979
S-	Kep Tobin	70°25'N,21°58'W	04-340	8288	Aug.1985
T -	Ikermit	64*47'N,40*18'W	04-373	8289	Okt.1984
Q-	Krøyers Holme	80*41'H, 13*55'W	04-313	8299	Jul.1984
R-	Upernevik	72*47'N,56*10'W	04-209	8298	Aug.1984
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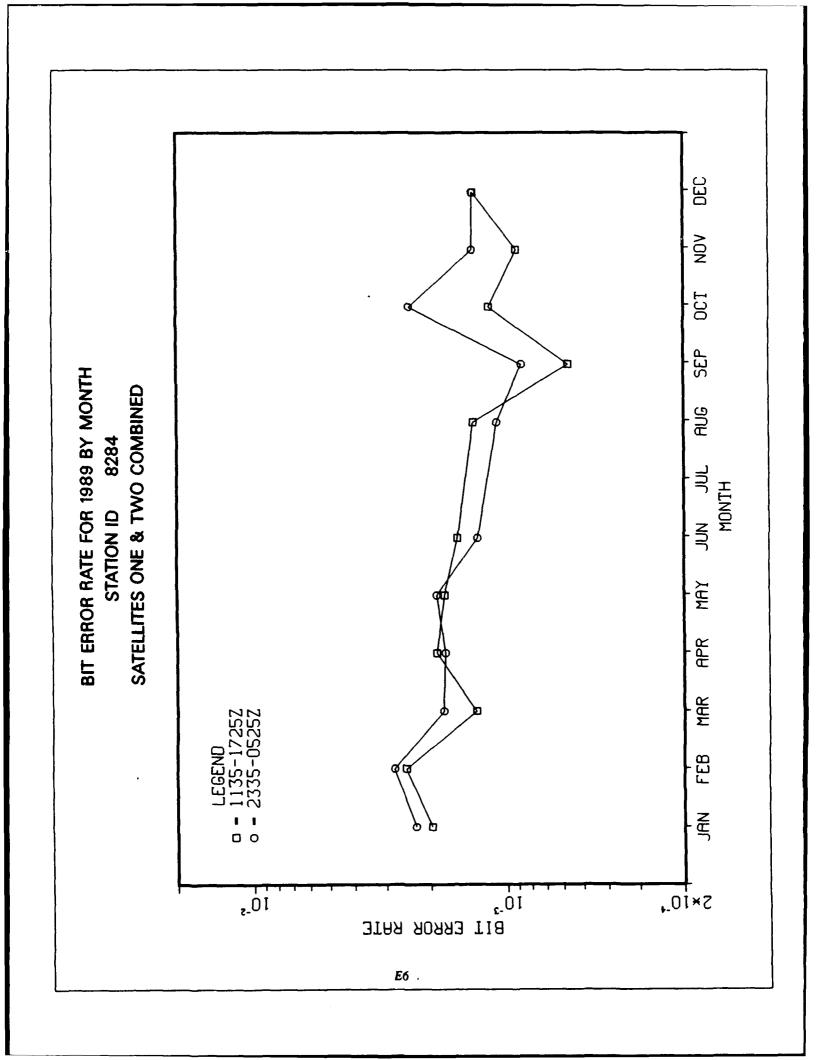


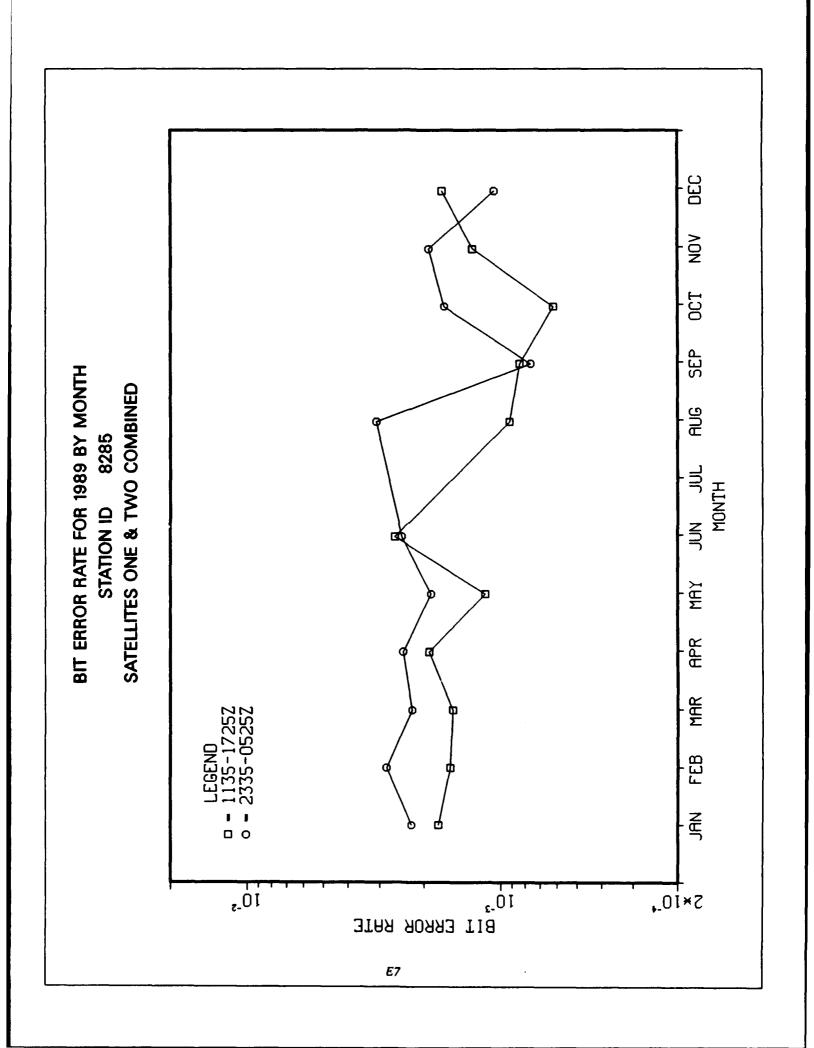


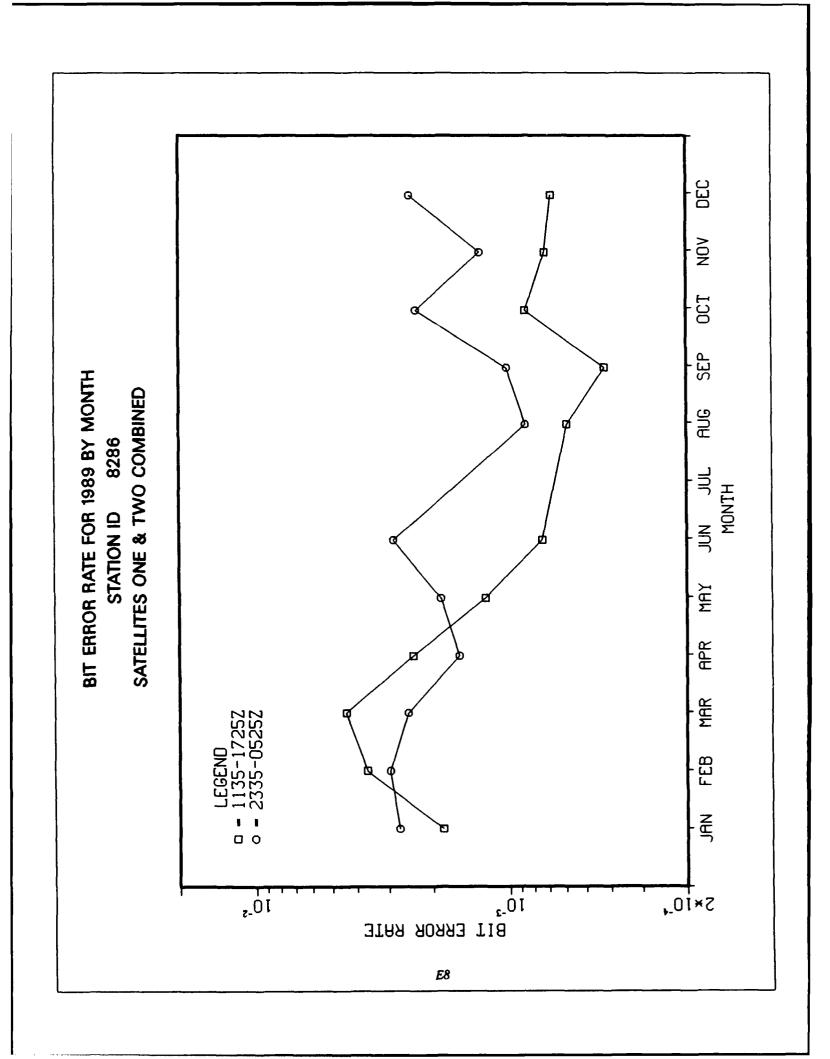


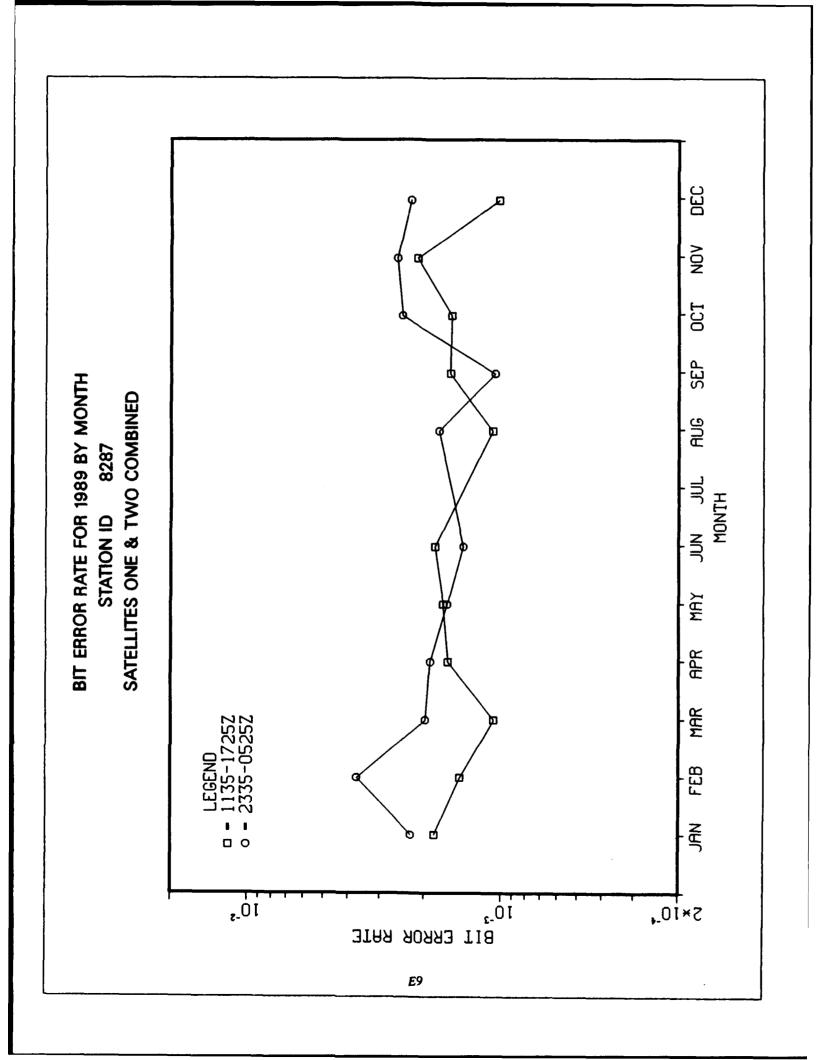
BIT ERROR RATE FOR 1989 BY MONTH
STATION ID 8283
SATELLITES JNE & TWO COMBINED

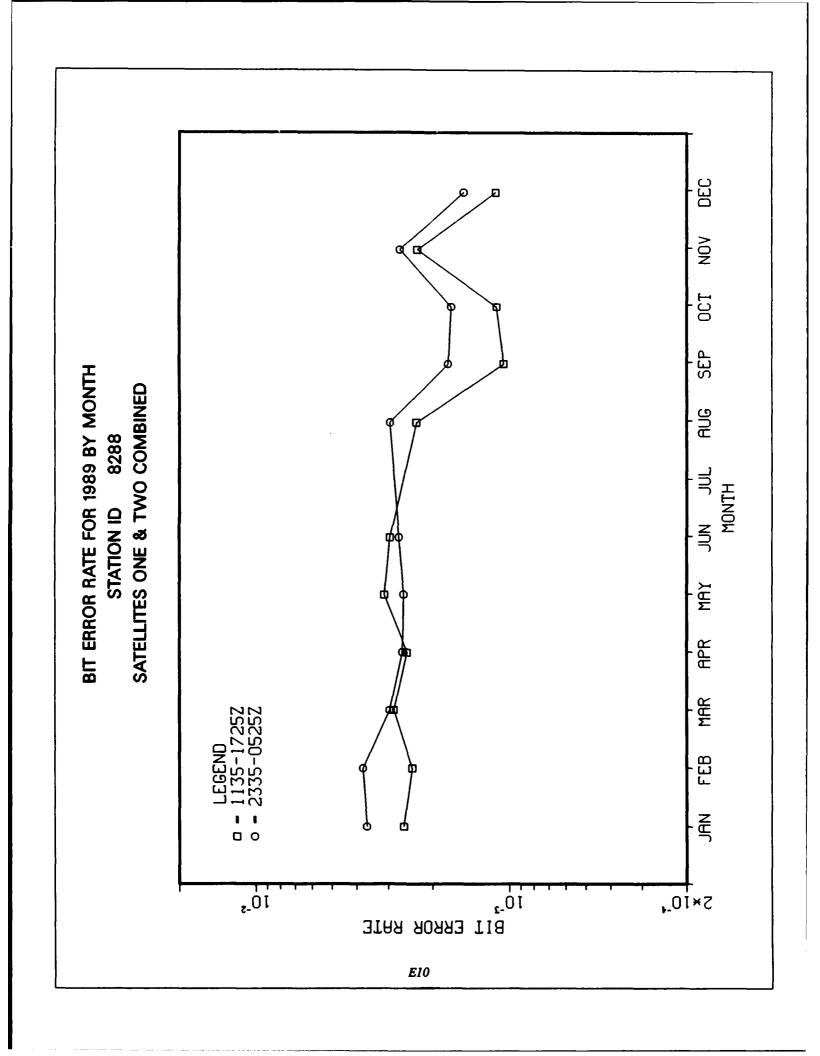


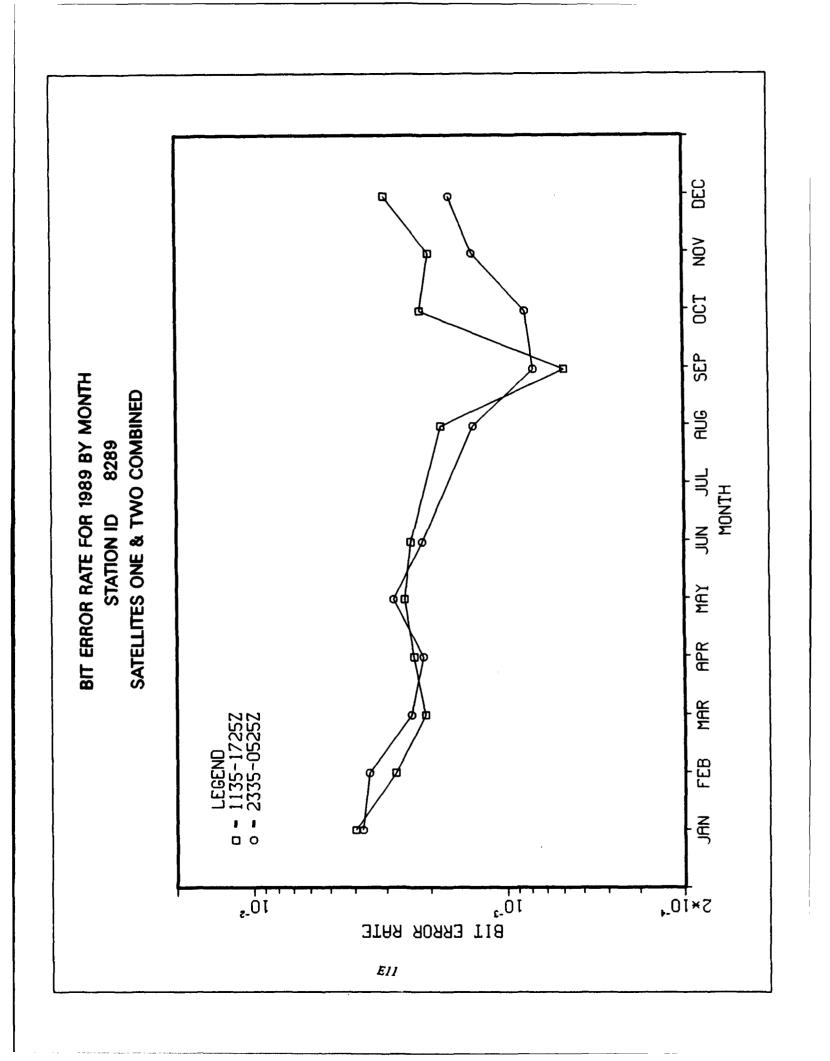




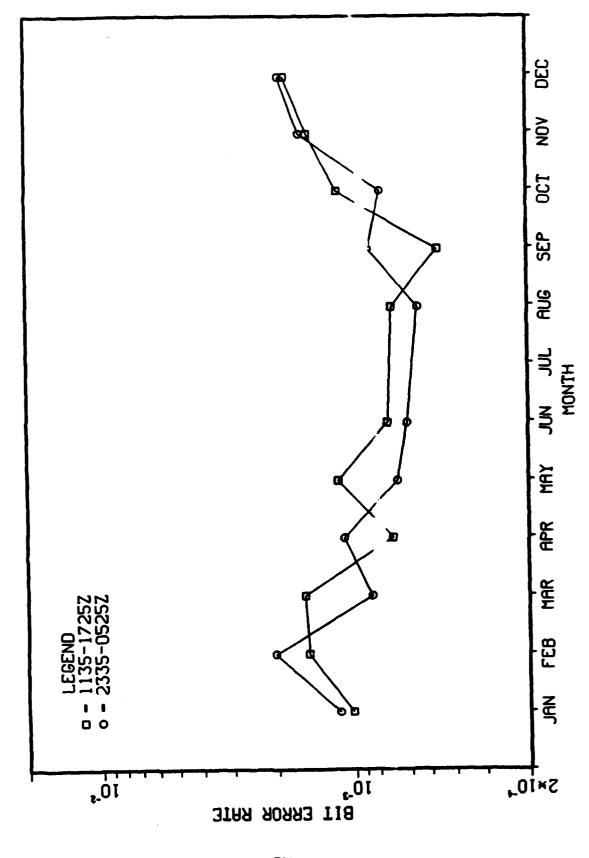


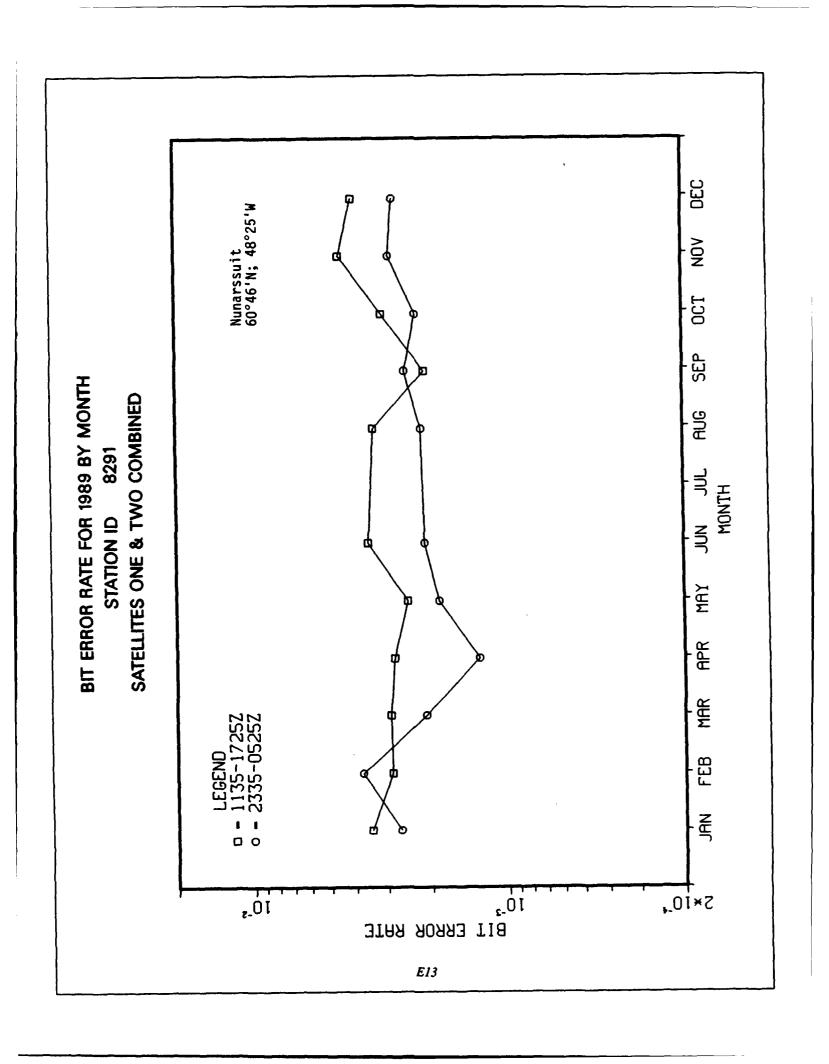


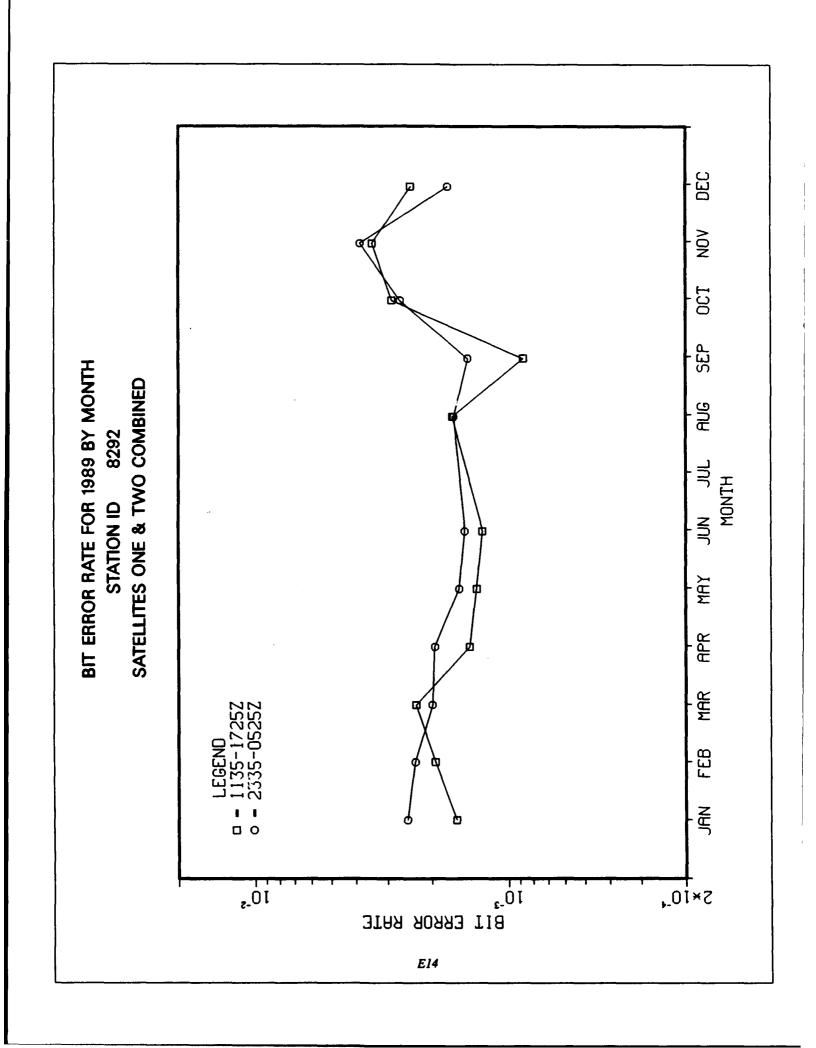


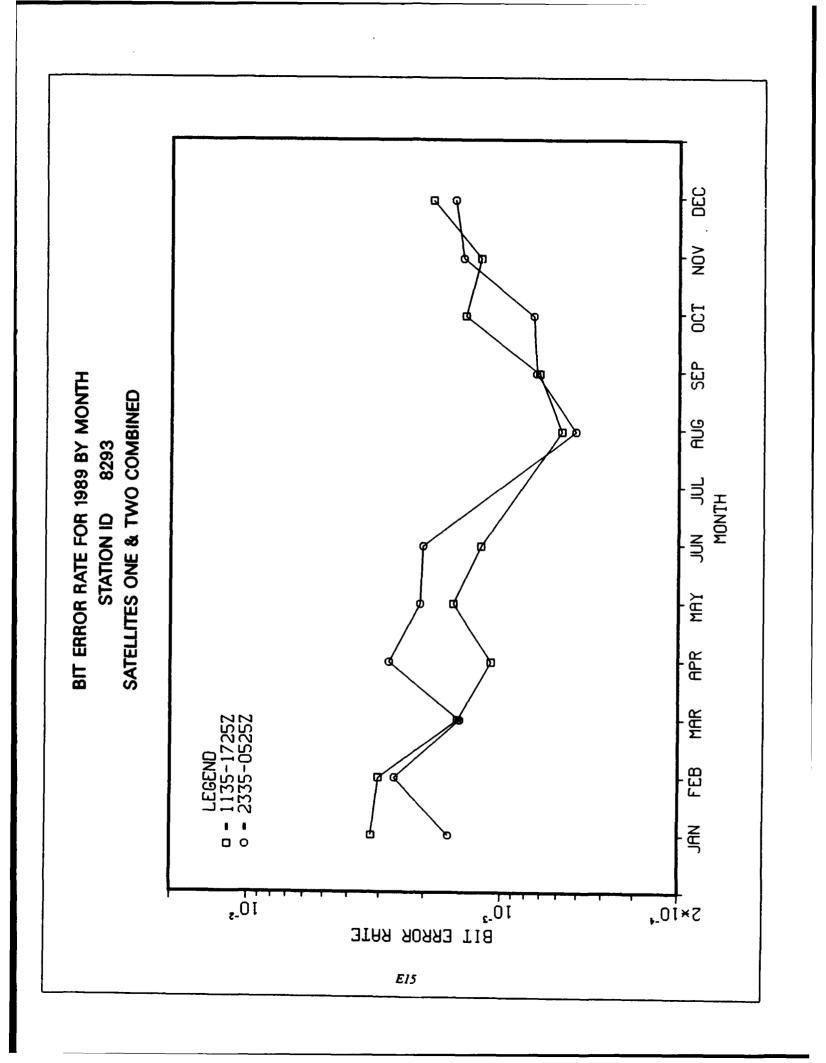


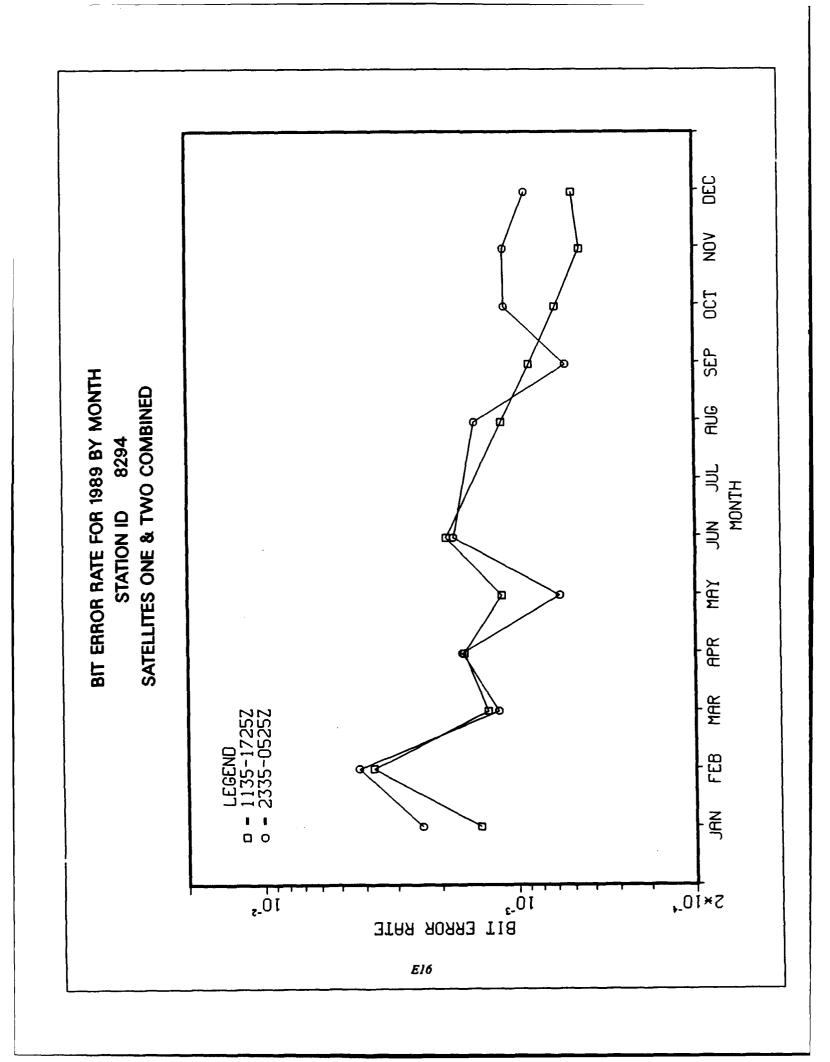
BIT ERROR RATE FOR 1989 BY MONTH STATION ID 8290 SATELLITES ONE & TWO COMBINED



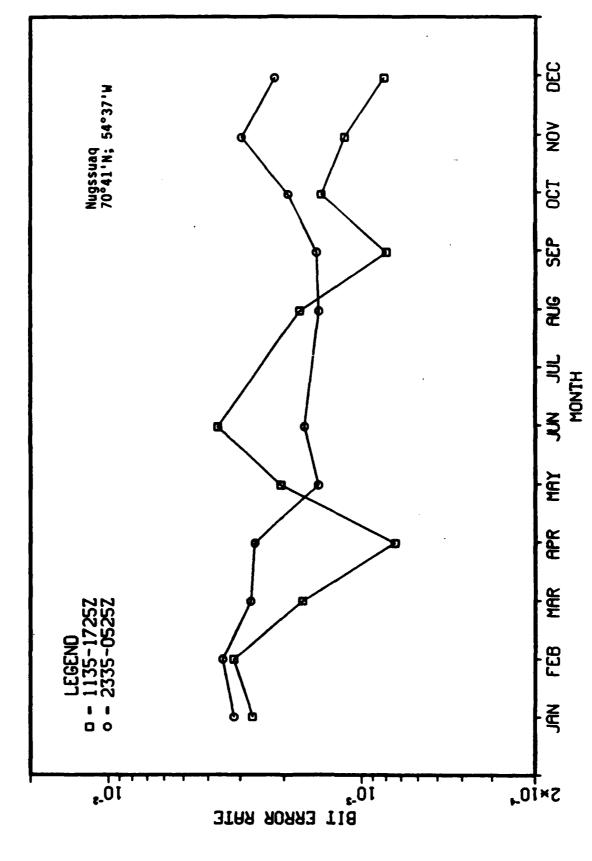


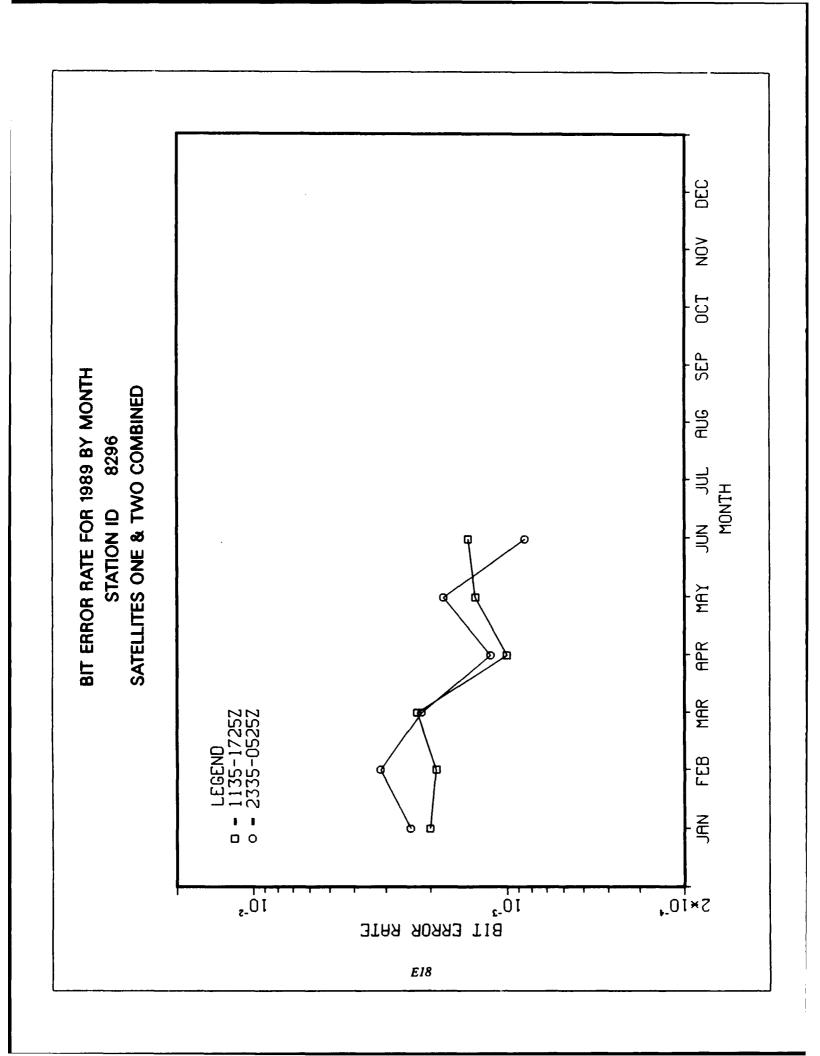


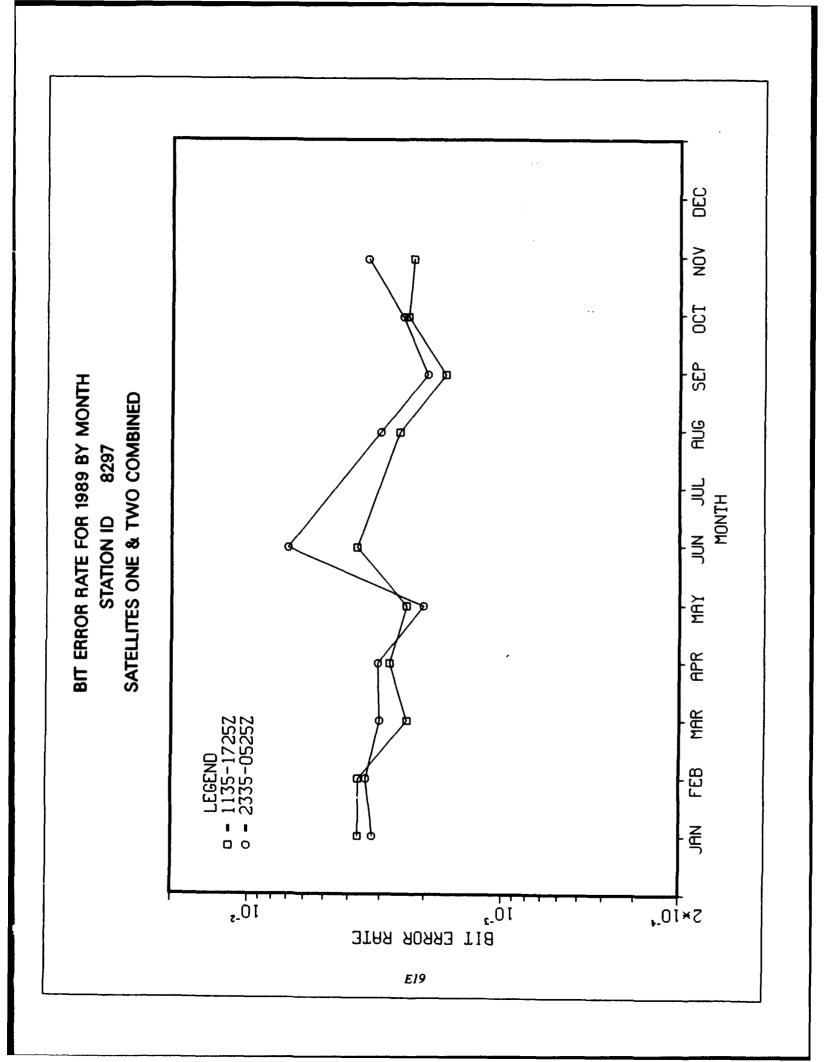


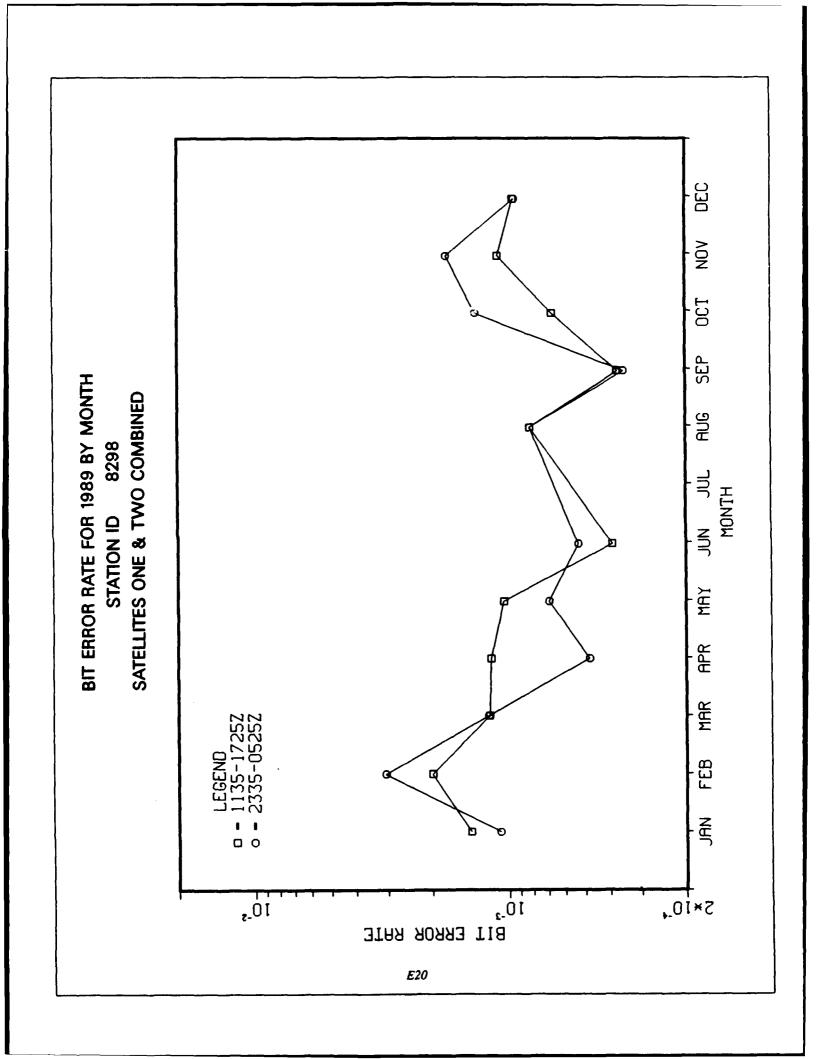


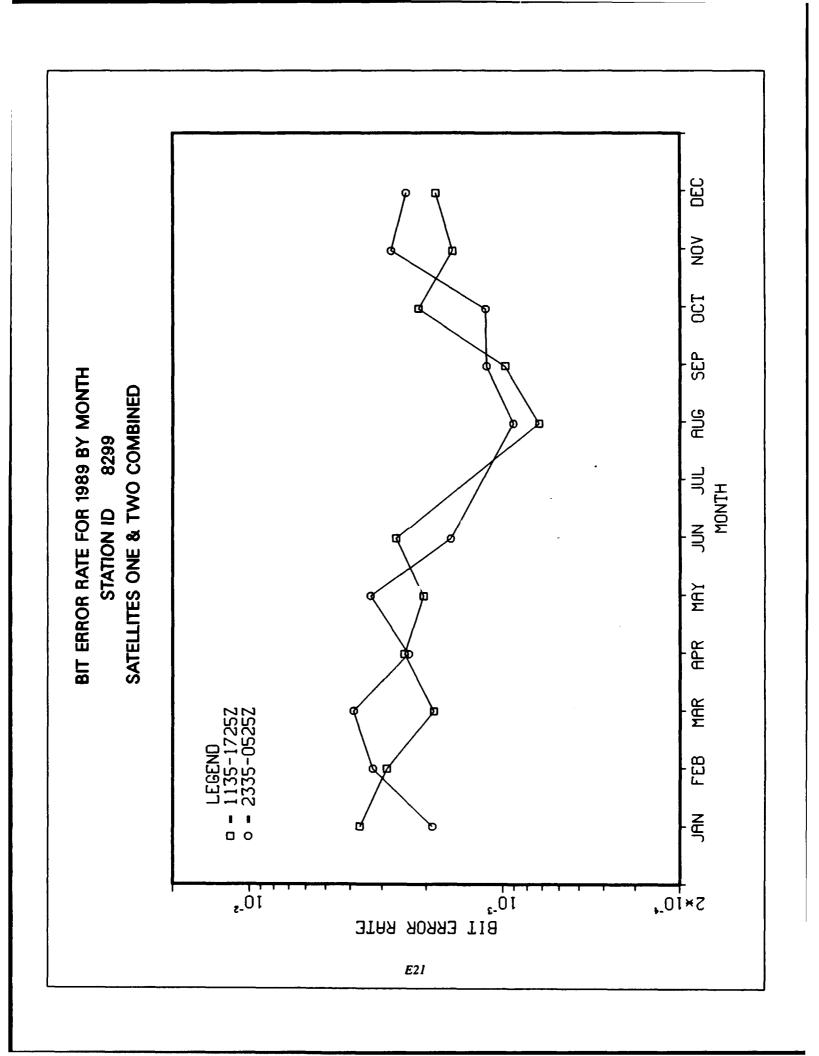
BIT ERROR RATE FOR 1989 BY MONTH
STATION ID 8296
SATELLITES ONE & TWO COMBINED

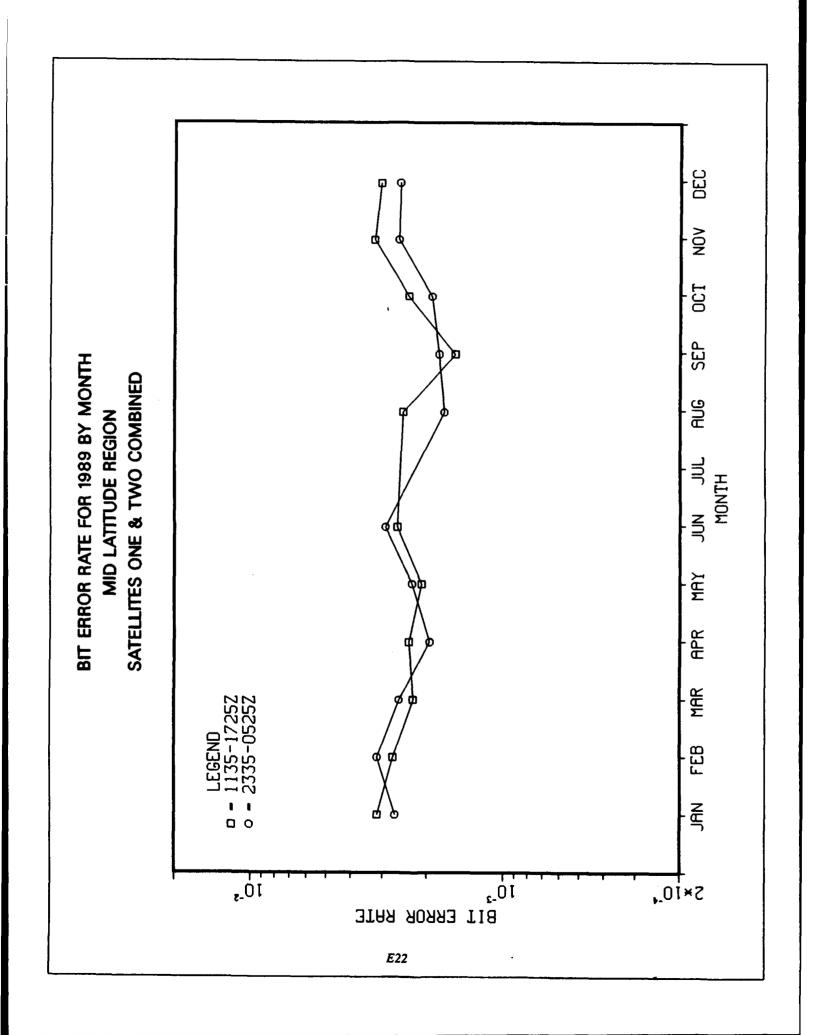


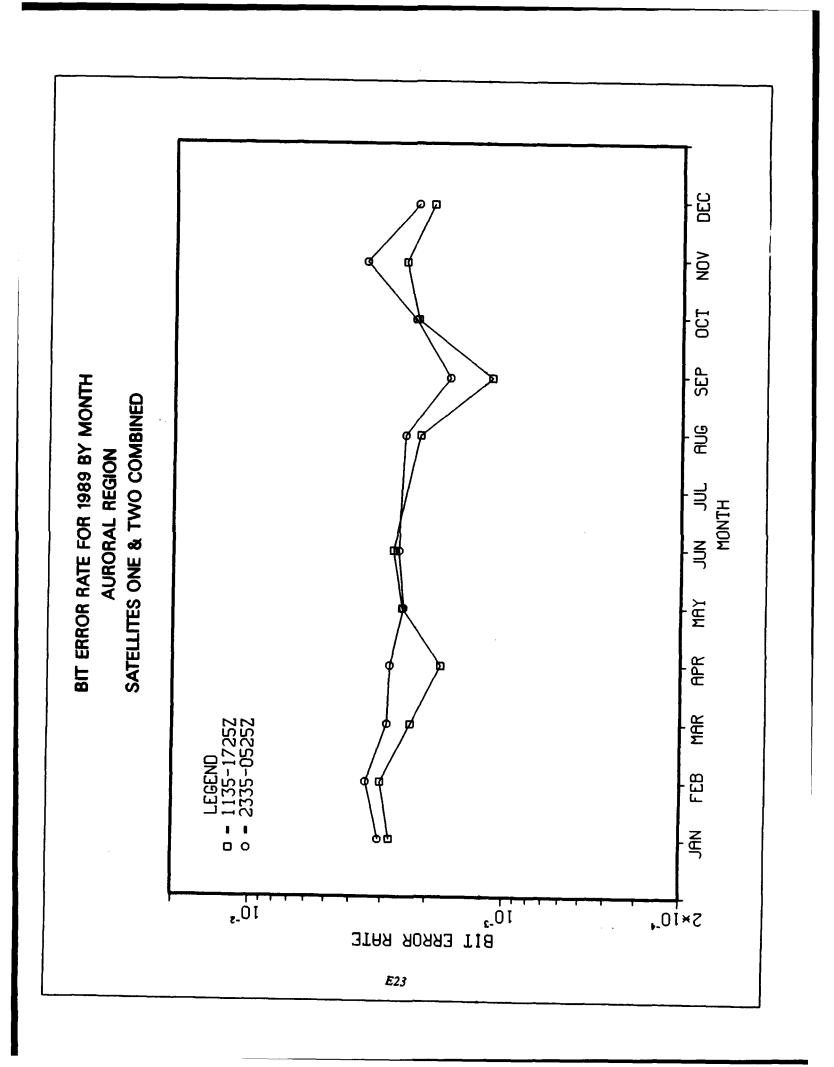


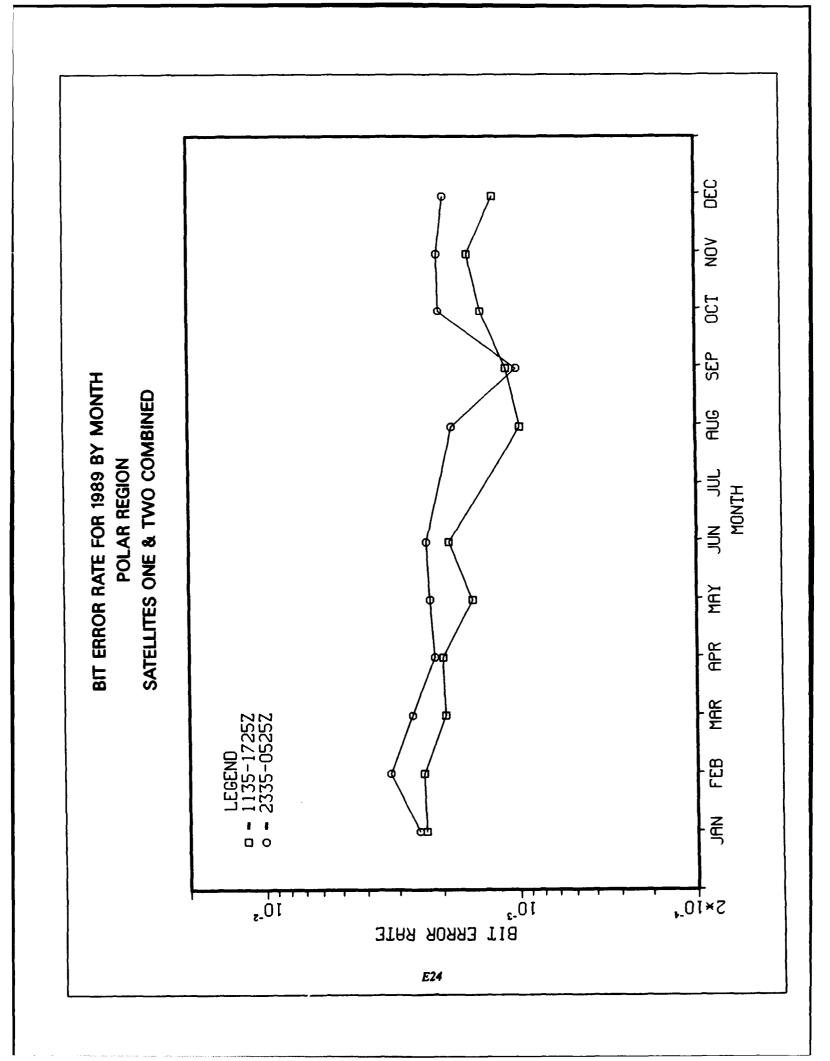






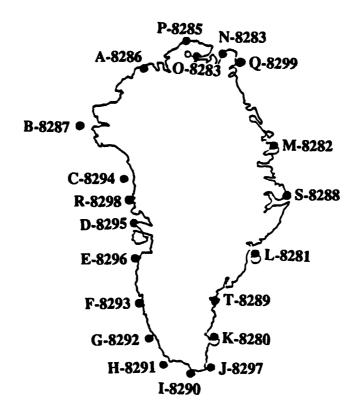




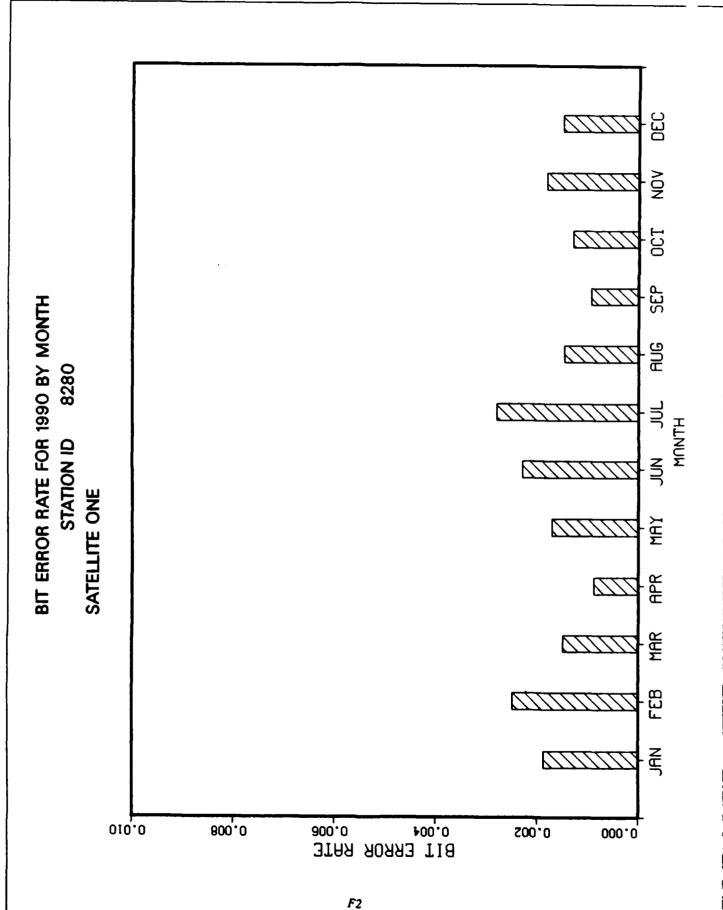


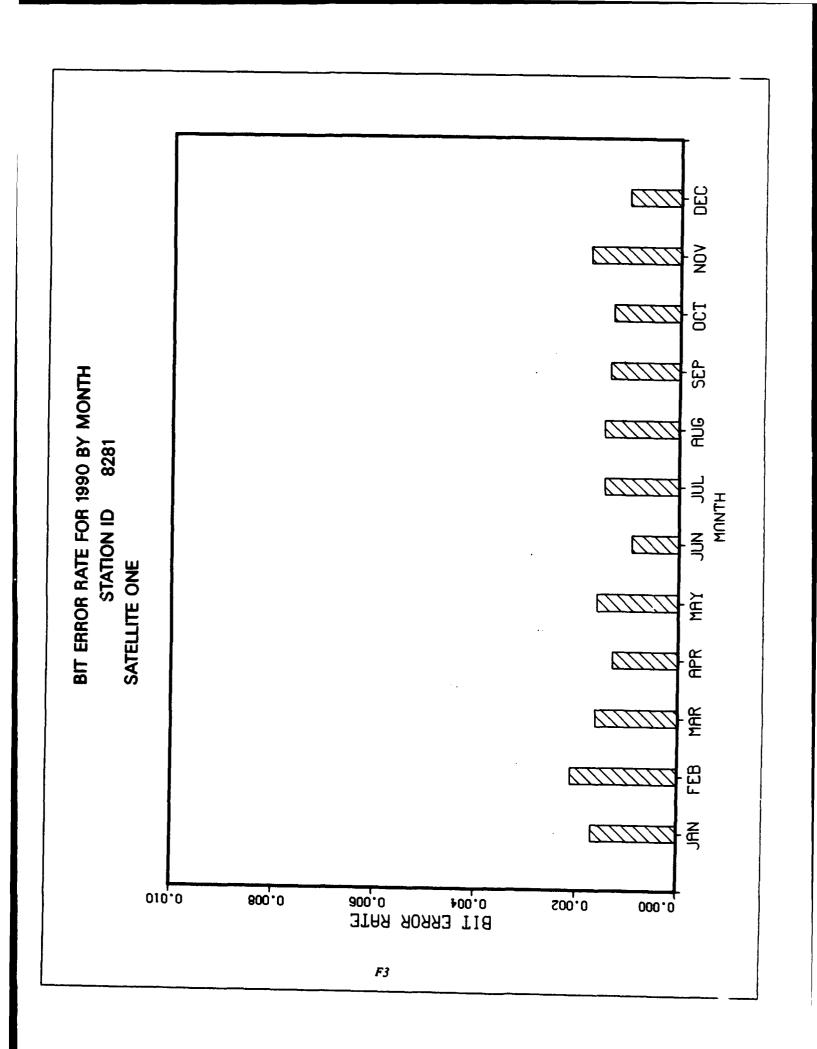
APPENDIX F

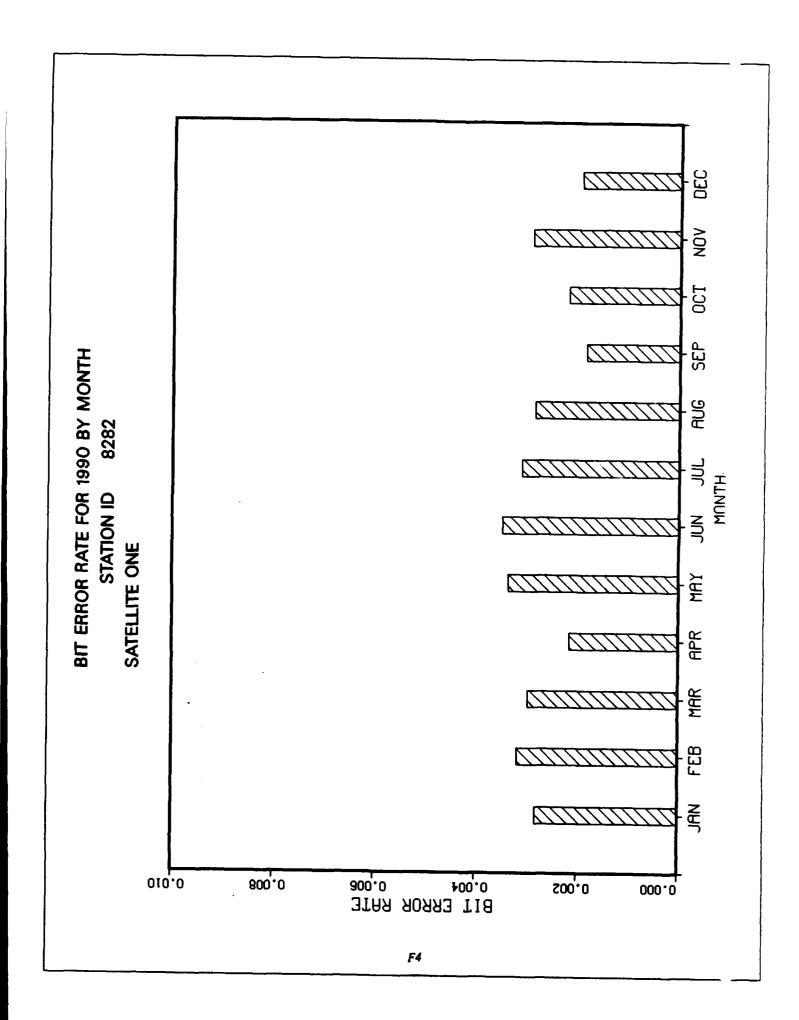
MONTHLY BIT-ERROR-RATE DATA FOR 1990

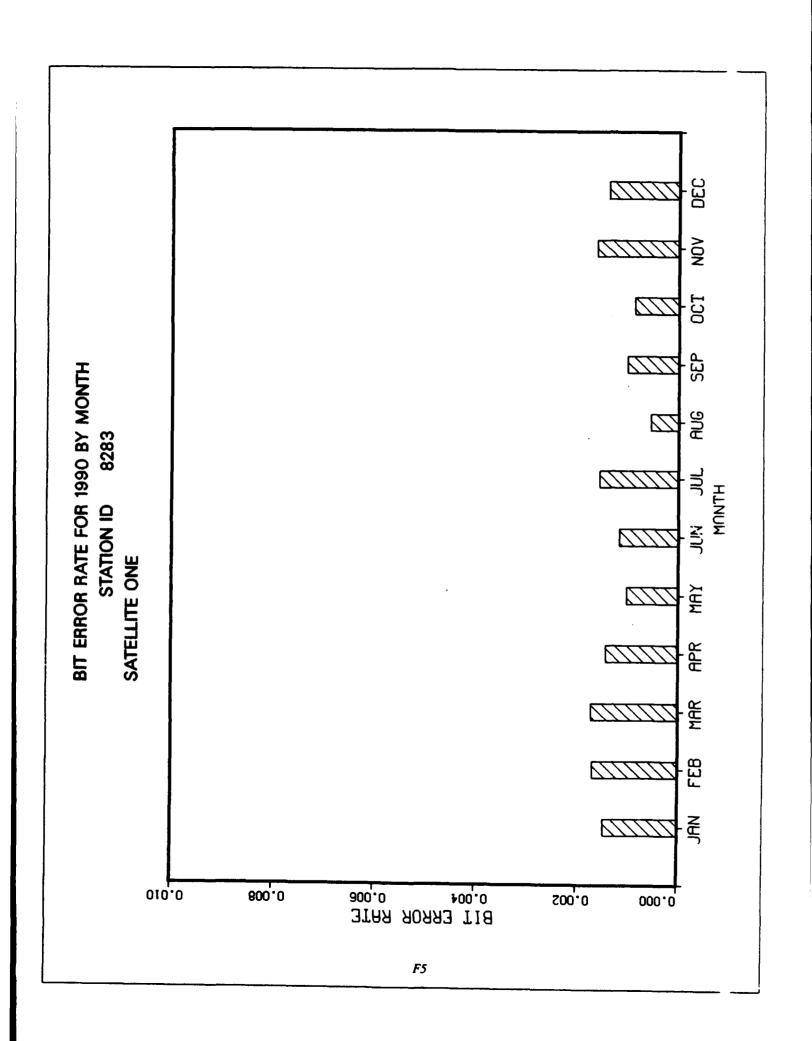


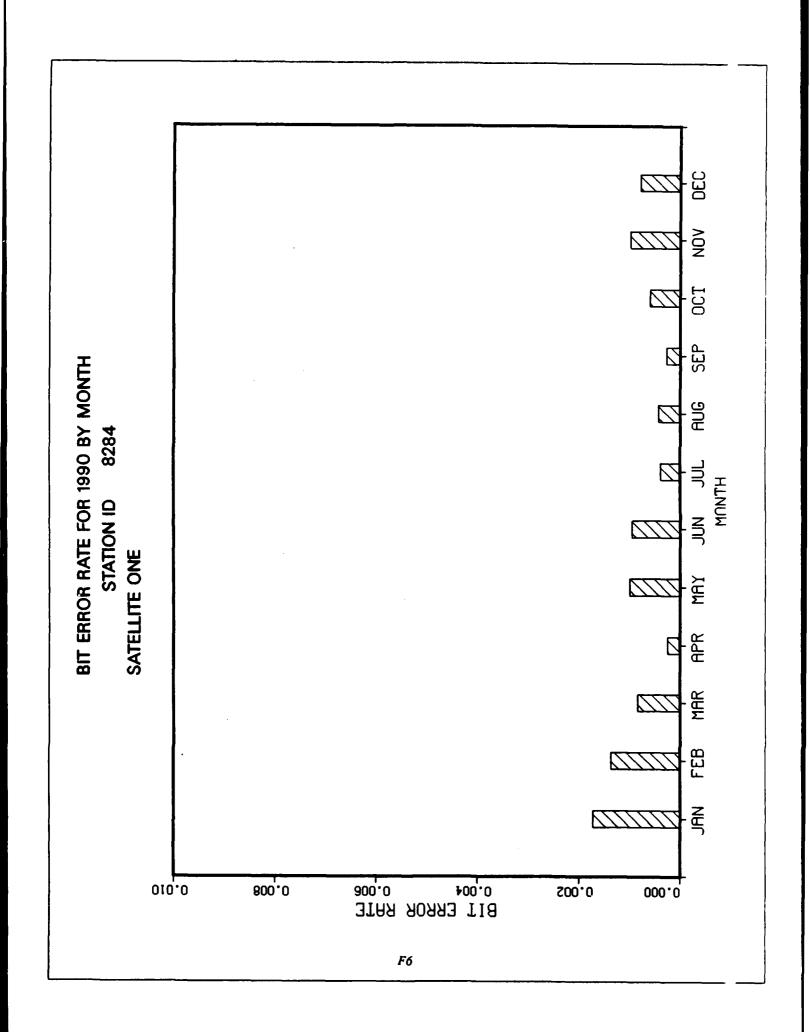
	Stellon	Lacetion	MHO-MR	Argos-MR	Established
A-	Hell Land	81*44'H, 59*00'H	04-207	8286	Jul.1982
B -	Carey Ser	76*38'N, 73*00'N	04-293	8187	Aug.1979
C-	Edderfugleser	74*02'H, 57*49'H	04-208	8294	Sep. 1981
D-	Mugssuaq	70*41'H,54*37'W	04-214	8275	Aug. 1982
E-	Agto	67-47'H,53-58'W	04-228	8276	Aug. 1983
F-	Slorelik	65*01'N,52*33'W	04-242	8293	Jun. 1983
G-	Frd.håbs lablink	62*34'N, 50*25'W	04-253	8292	Jun. 1962
H-	Munerssuit	60*46'N,48*25'N	04-266	8291	Jun. 1981
I -	Anglesoq	59*59'N,45*12'W	04-285	8290	Jun. 1981
J-	Prins Chr.sund	40°02'N,43°07'W	04-390	8297	Okt.1982
K-	Ikermierssuk	61°56'N, 42°04'W	04-381	8280	Aug. 1978
L-	Aputiteq	67*47'N, 32*18'W	04-351	6261	Aug.1976
M-	Daneborg	74-18'N, 20-13'W	04-330	8282	Aug.1978
N-	Station Word	81-36'H, 16-40'W	04-312	8283	Sep.1979
0 -	Kap Hereld Holtke	82°09'N, 29°53'W	04-305	8284	Aug. 1979
Ρ-	Kap Morris Jessup	83*40'N, 33*22'W	04-301	0205	Jul.1979
S-	Kep Tobin	70-25'N, 21-58'W	04-340	8288	Aug. 1985
T-	Ikereit	64*47'H,40*18'W	04-373	8289	Okt.1986
Q-	Krøyers Holme	00*41'N,13*55'W	04-313	8299	Jul.1984
Ř-	Upernevik	72*47'H, 56*10'W	04-209	6298	Aug. 1764

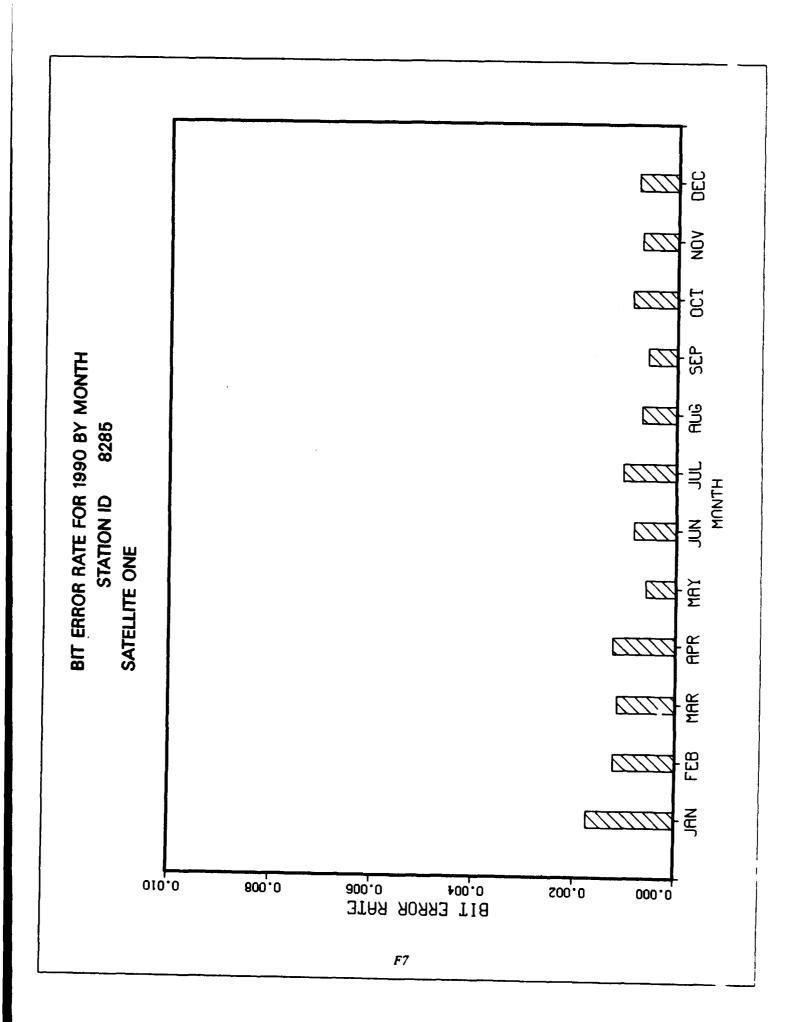


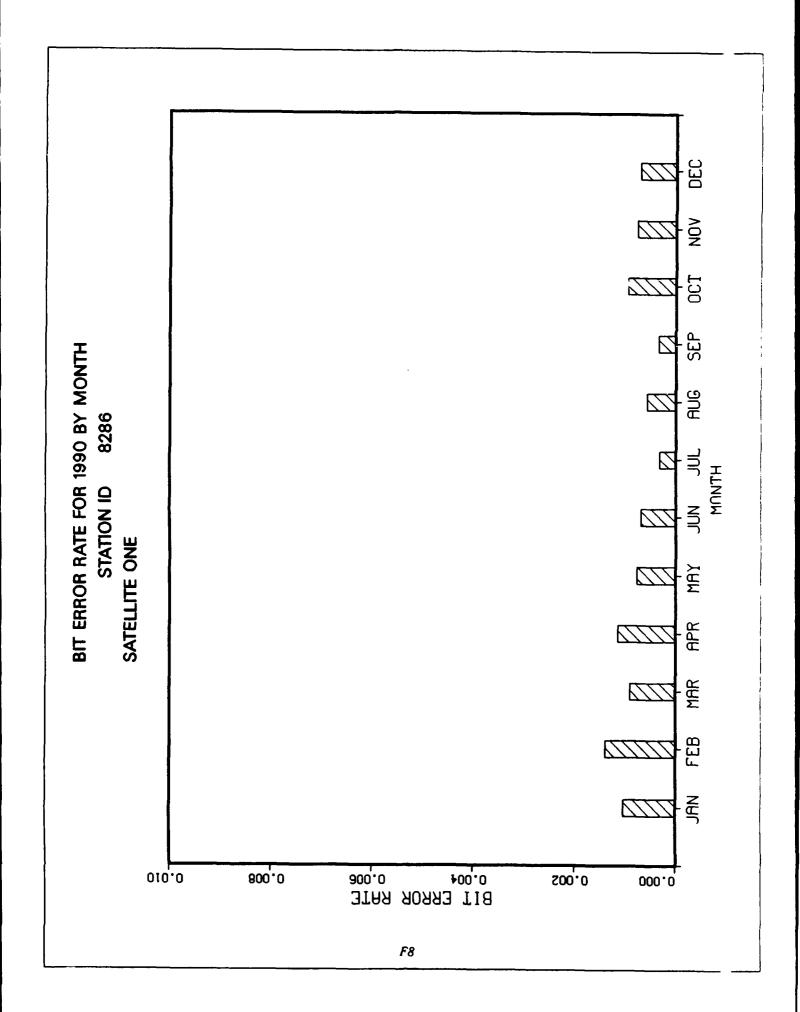


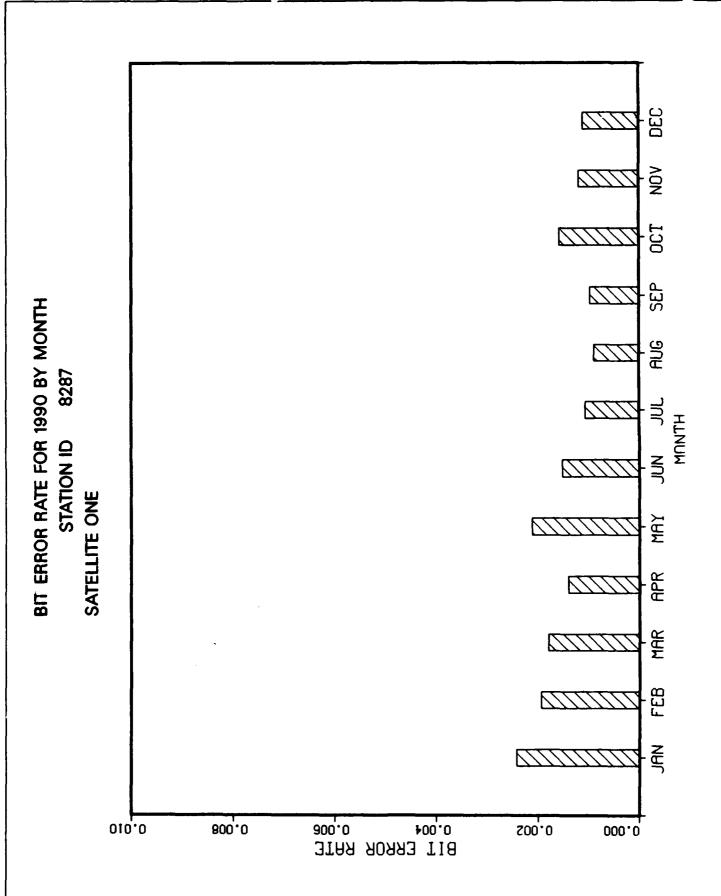


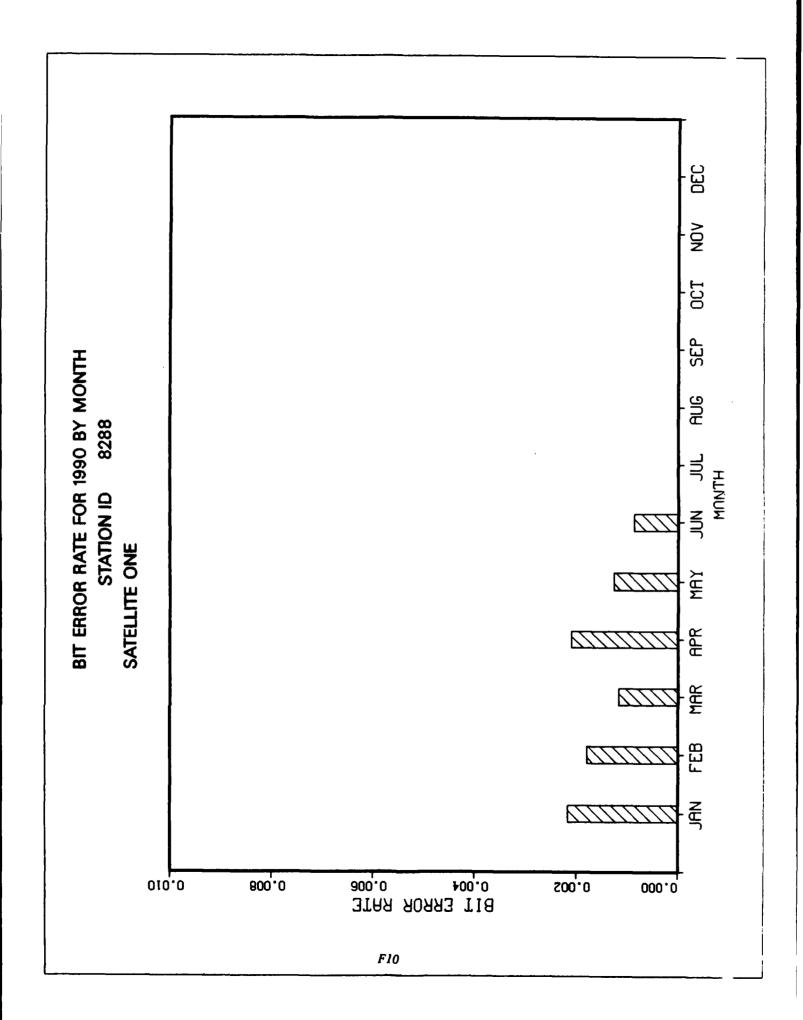


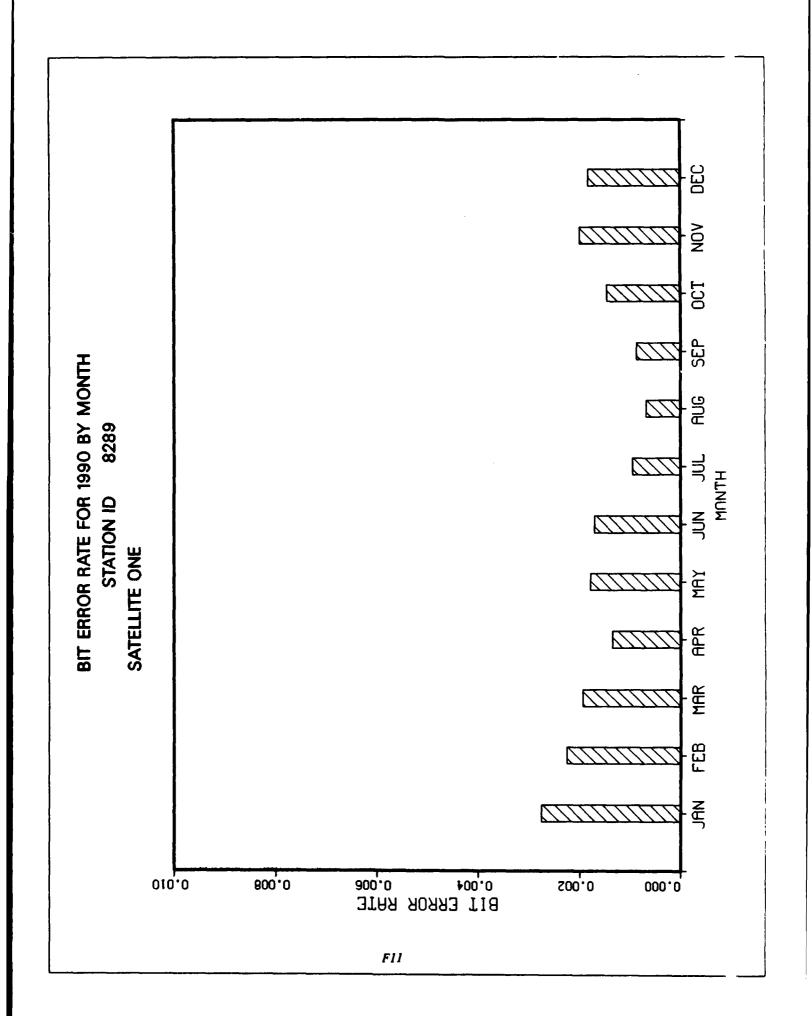


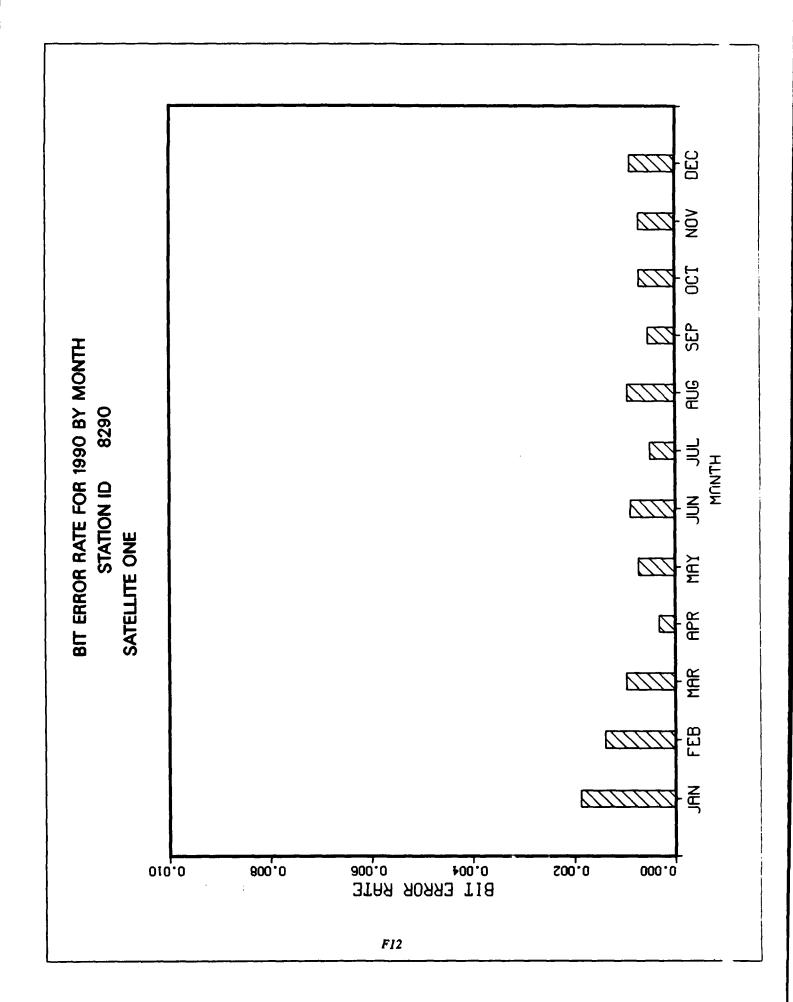


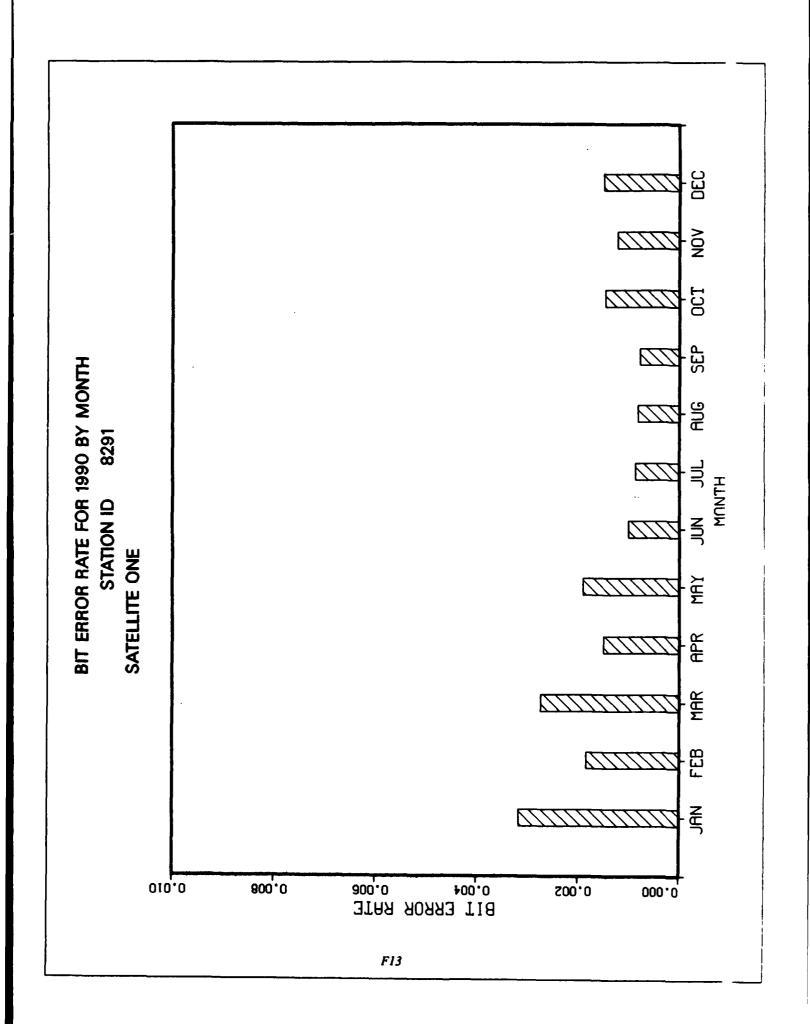


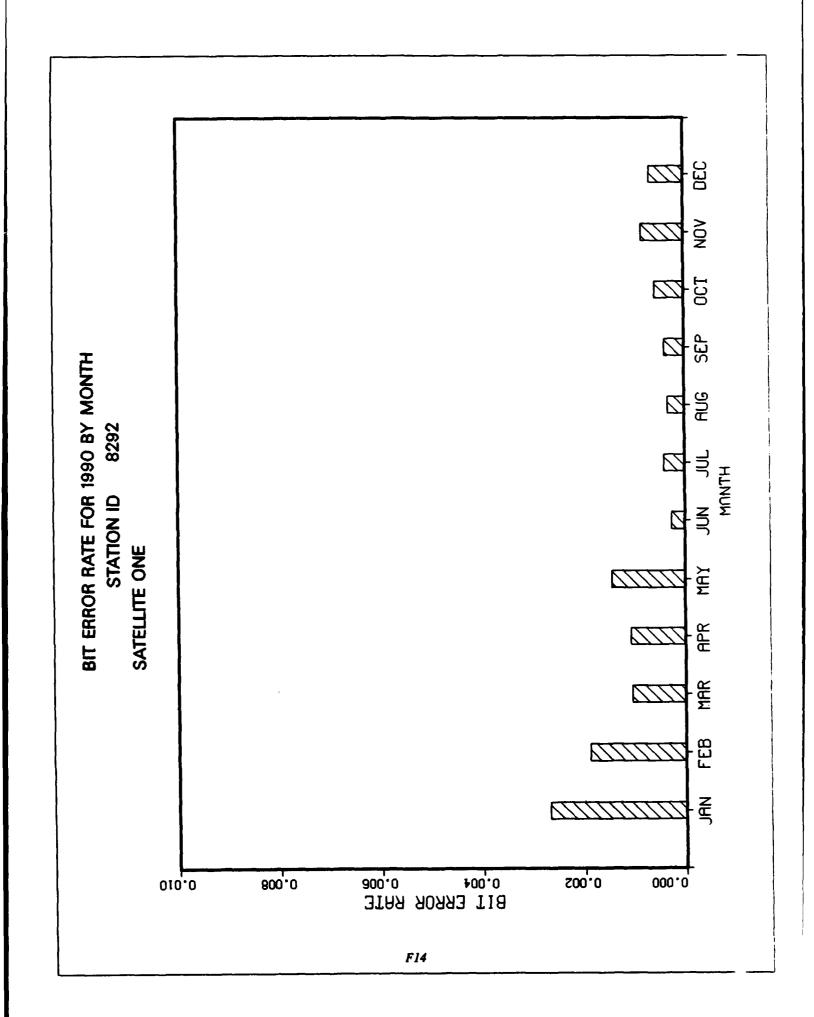


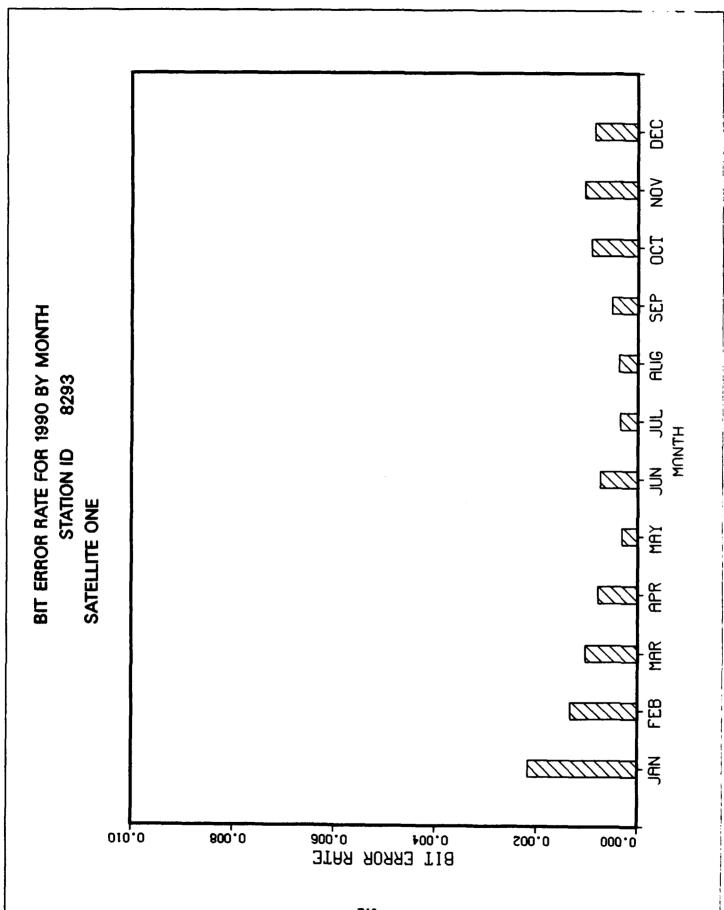


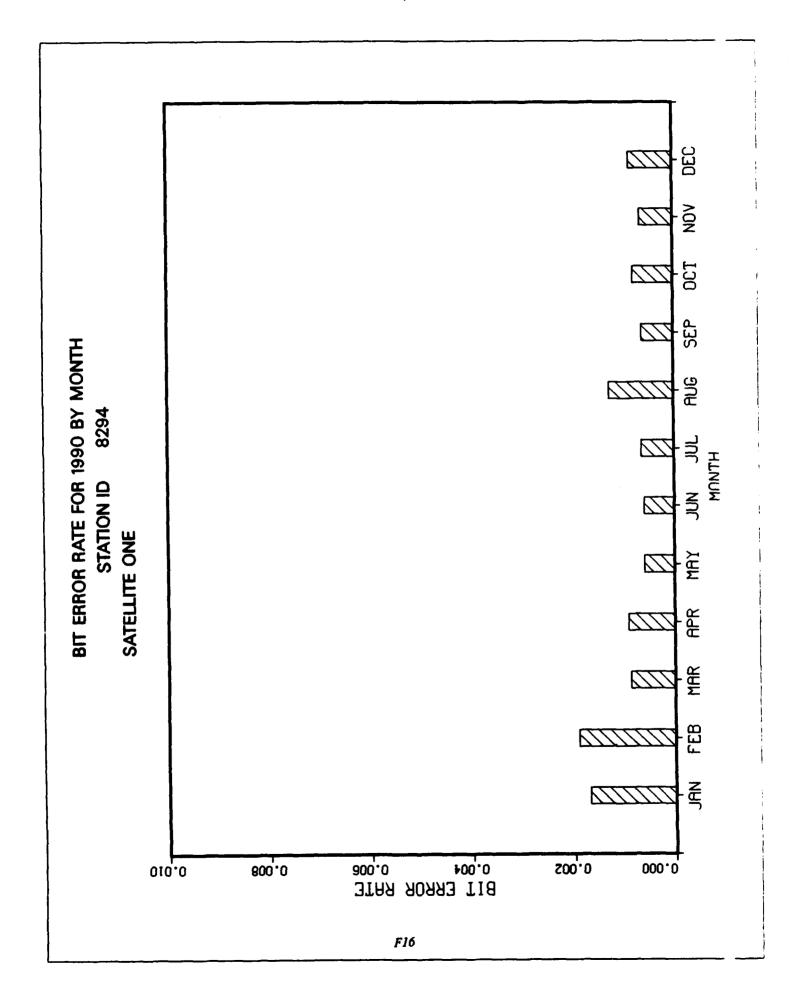


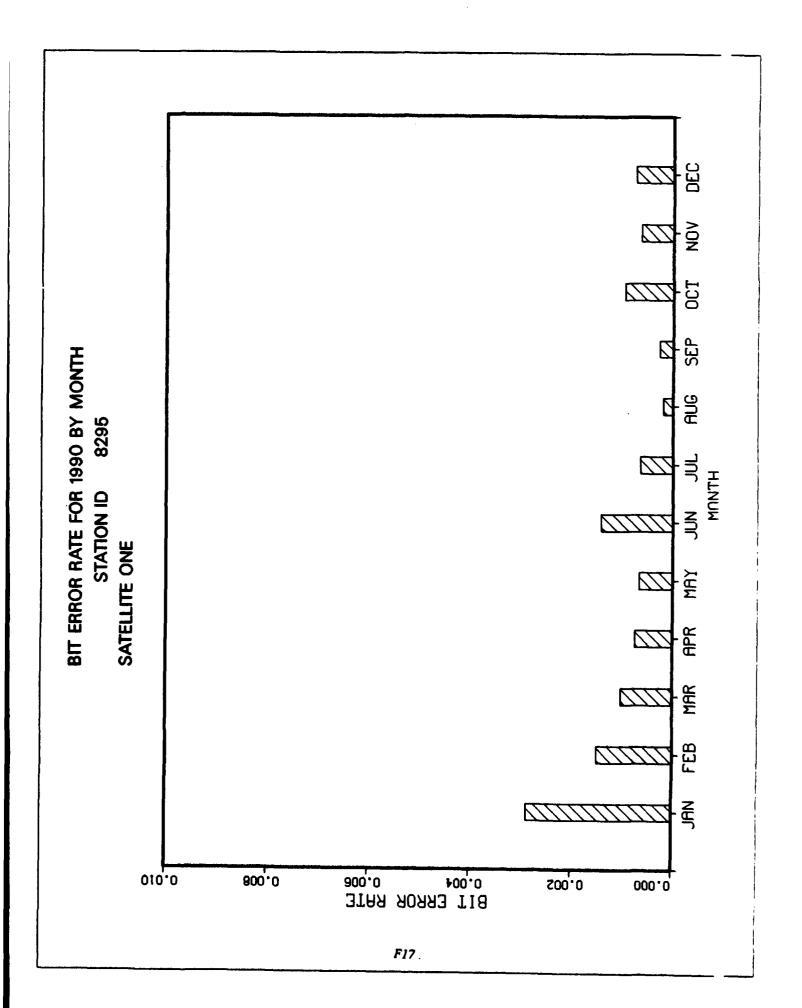


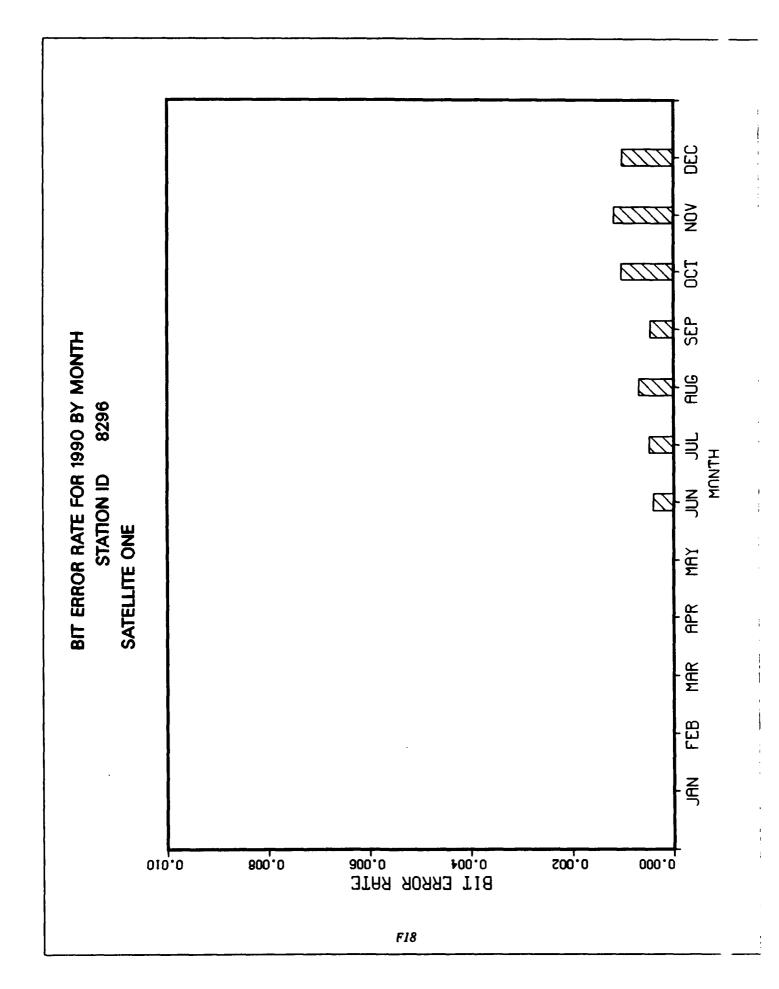


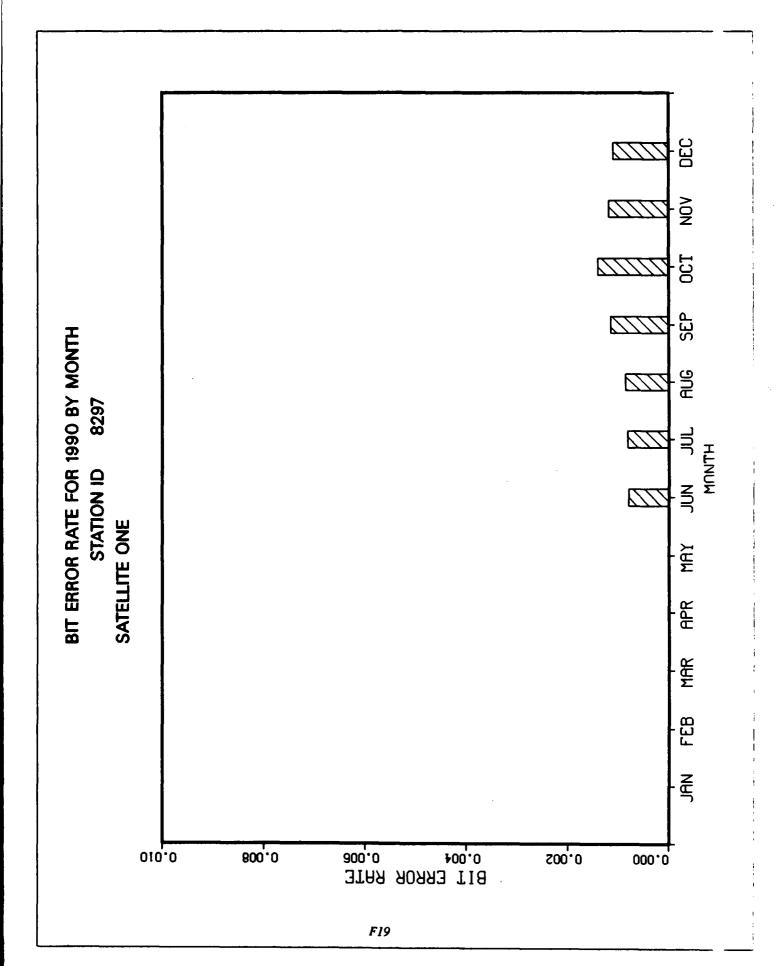


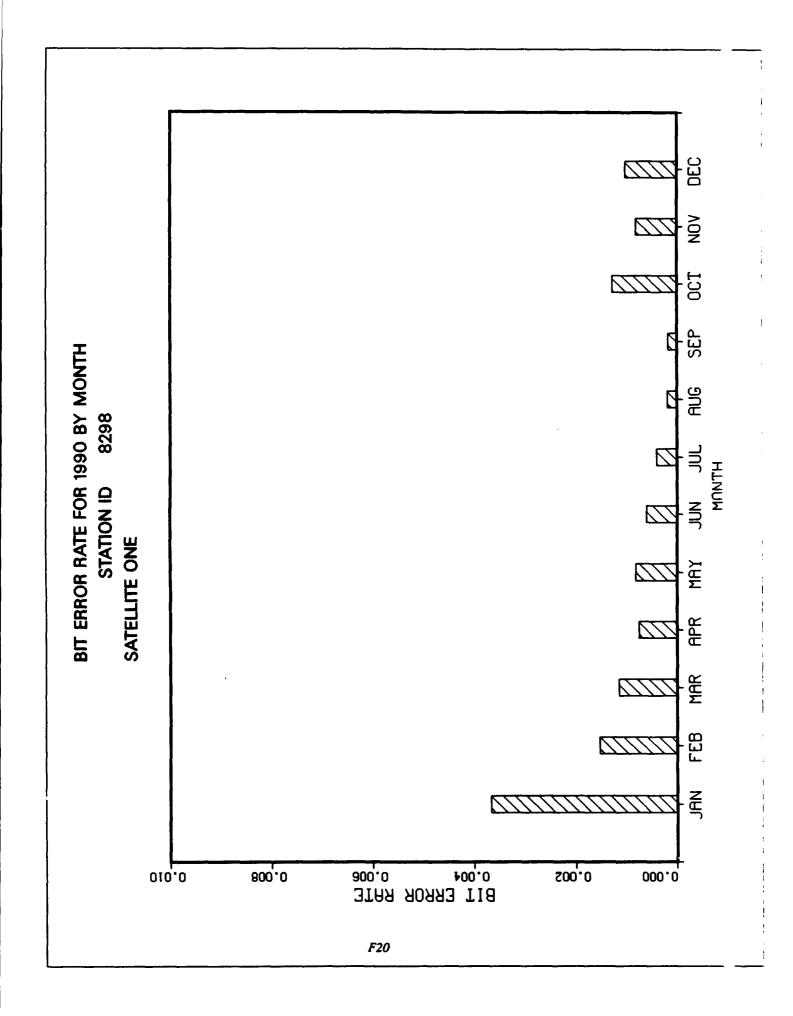


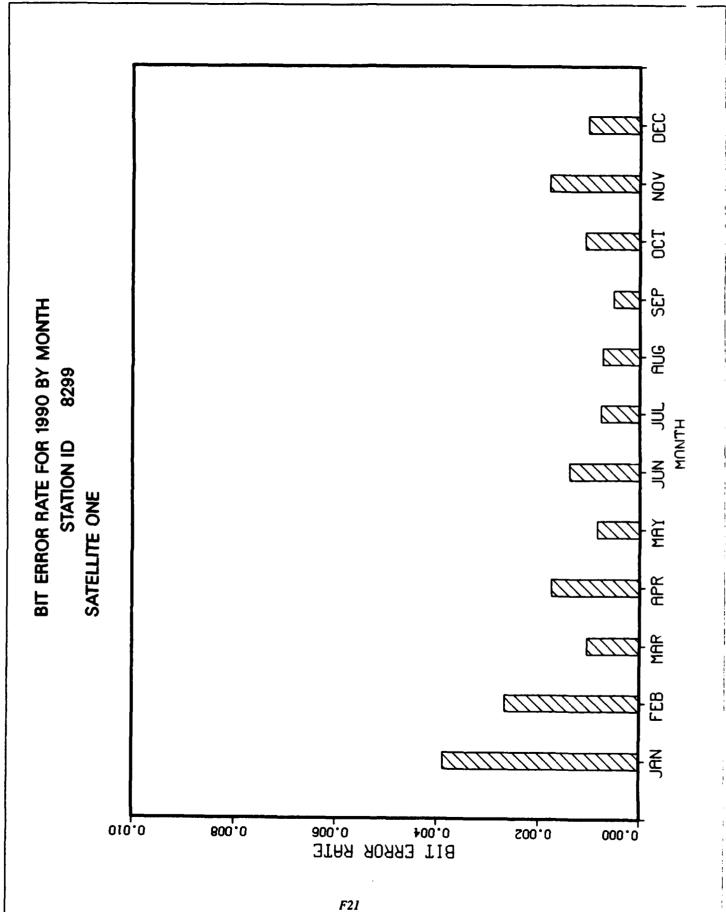


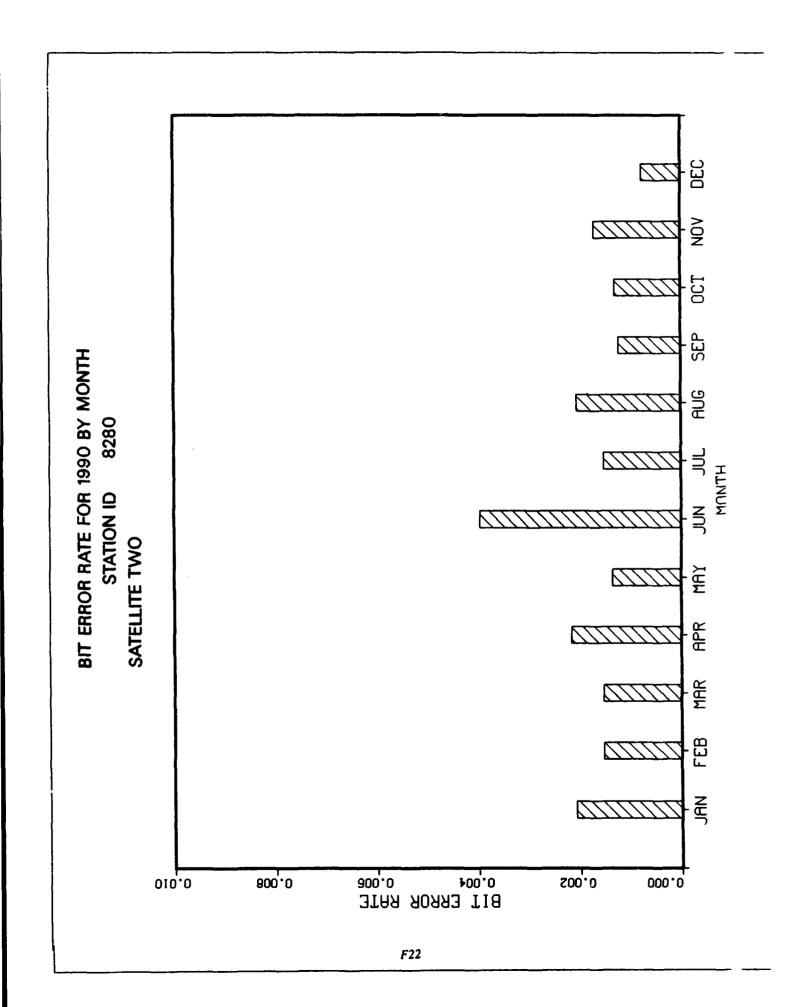


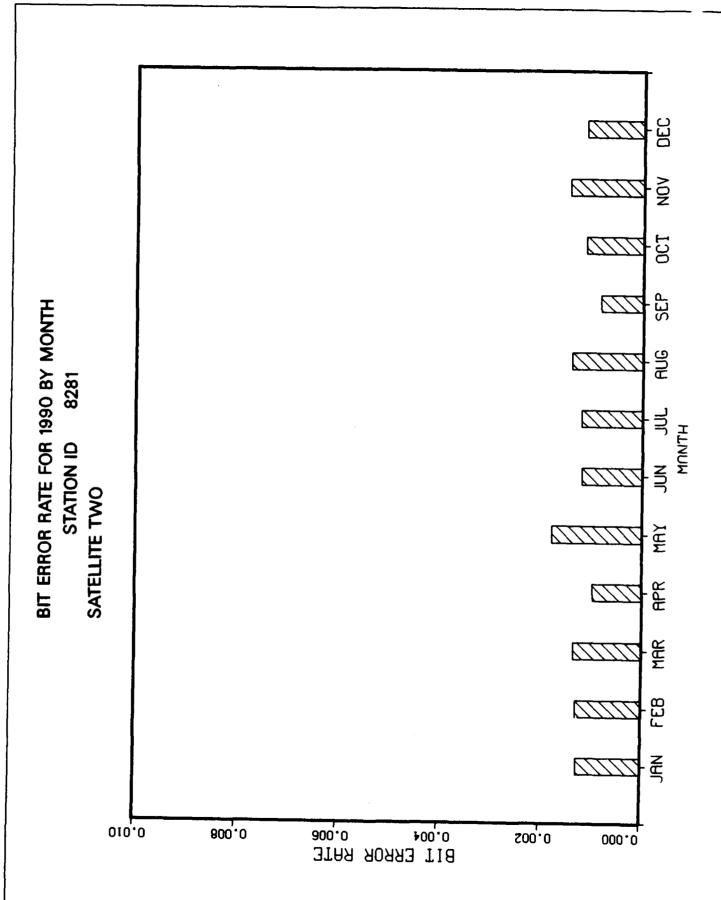


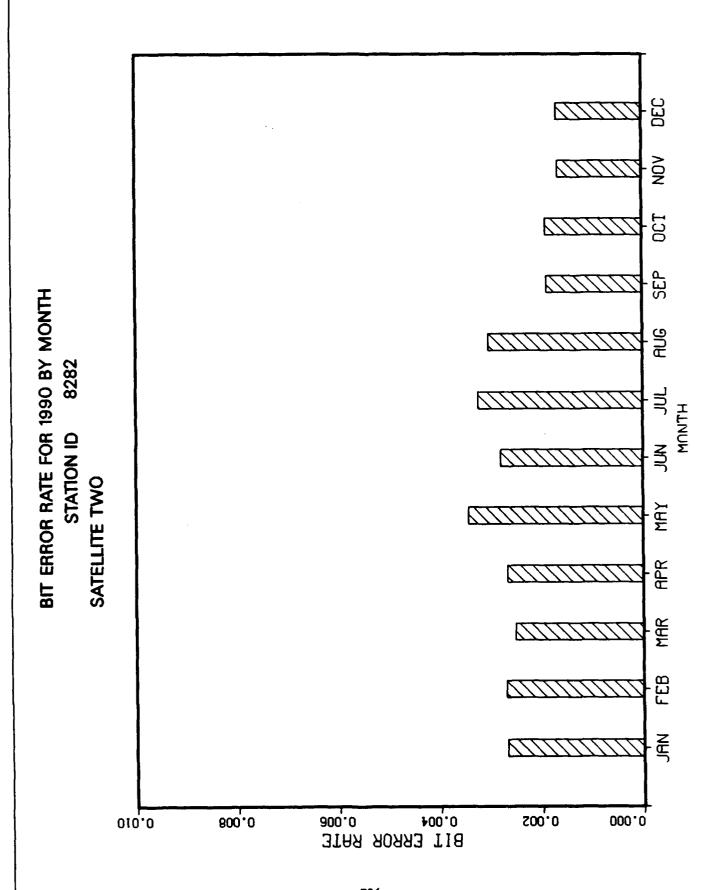


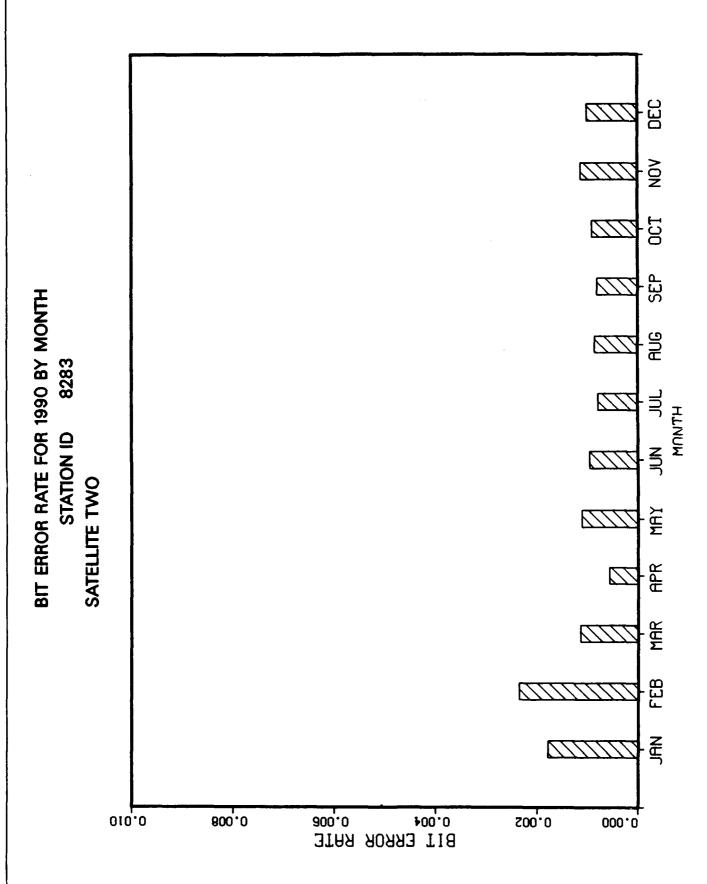


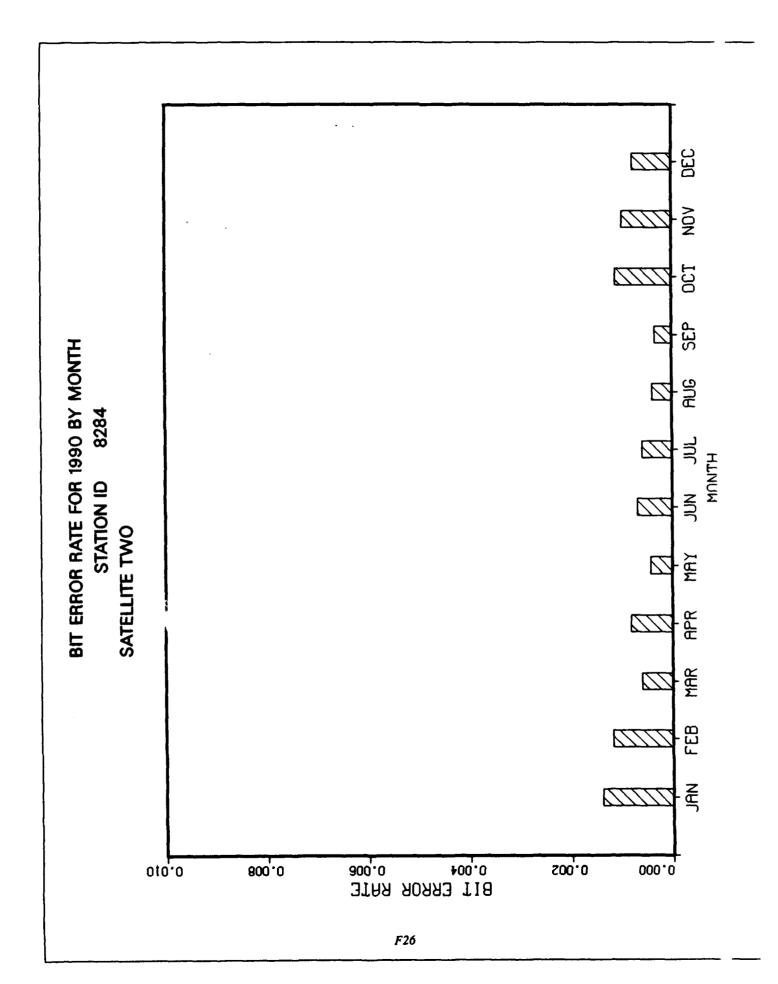


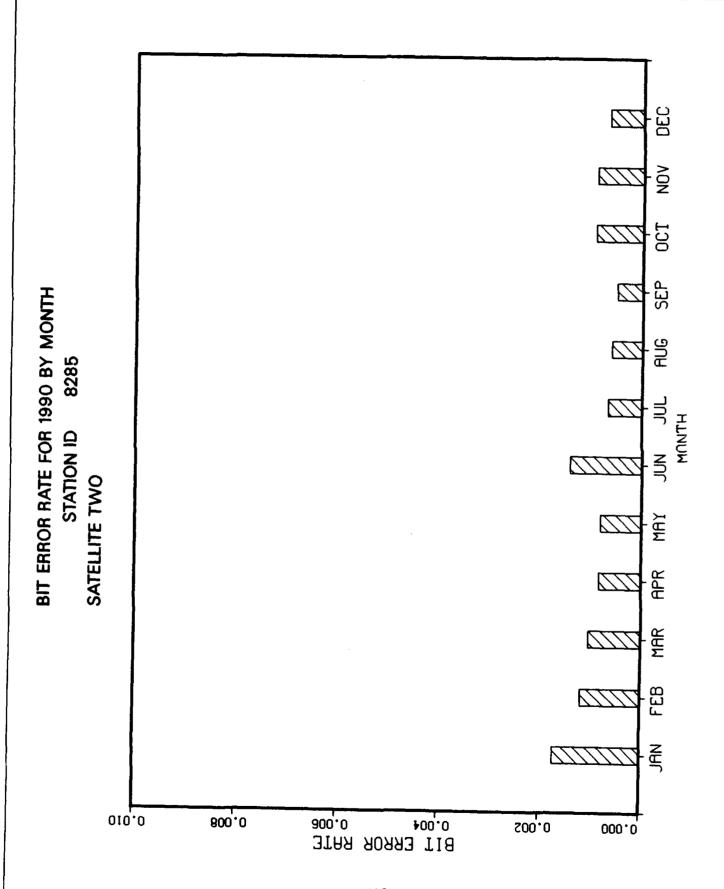


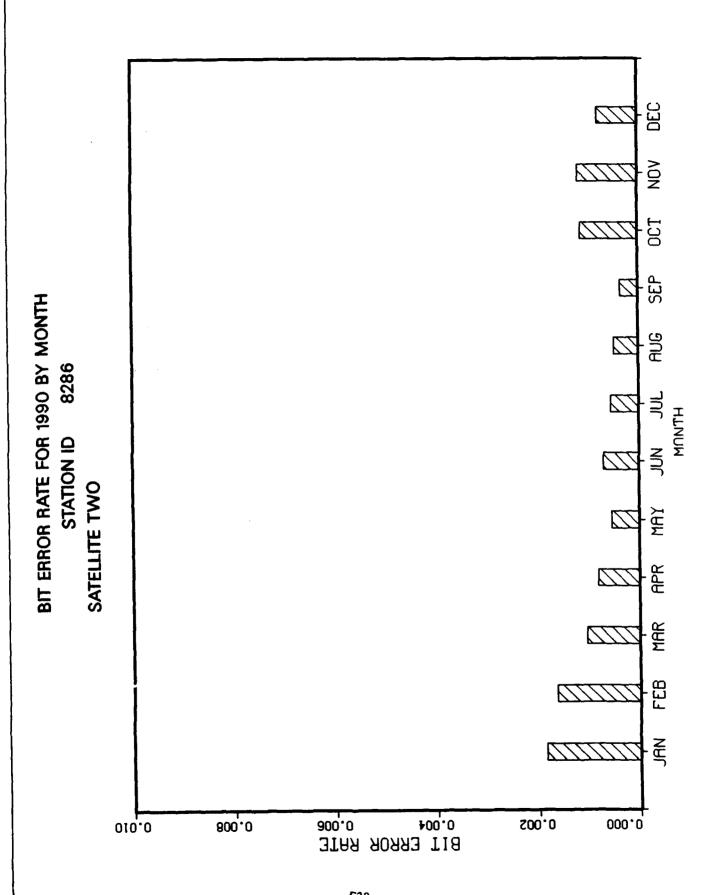


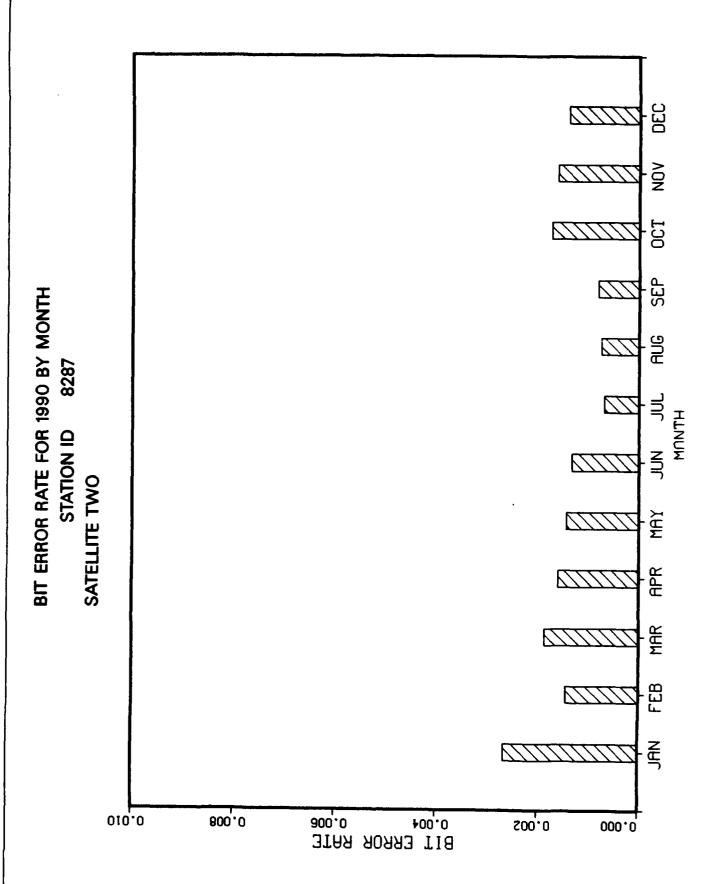


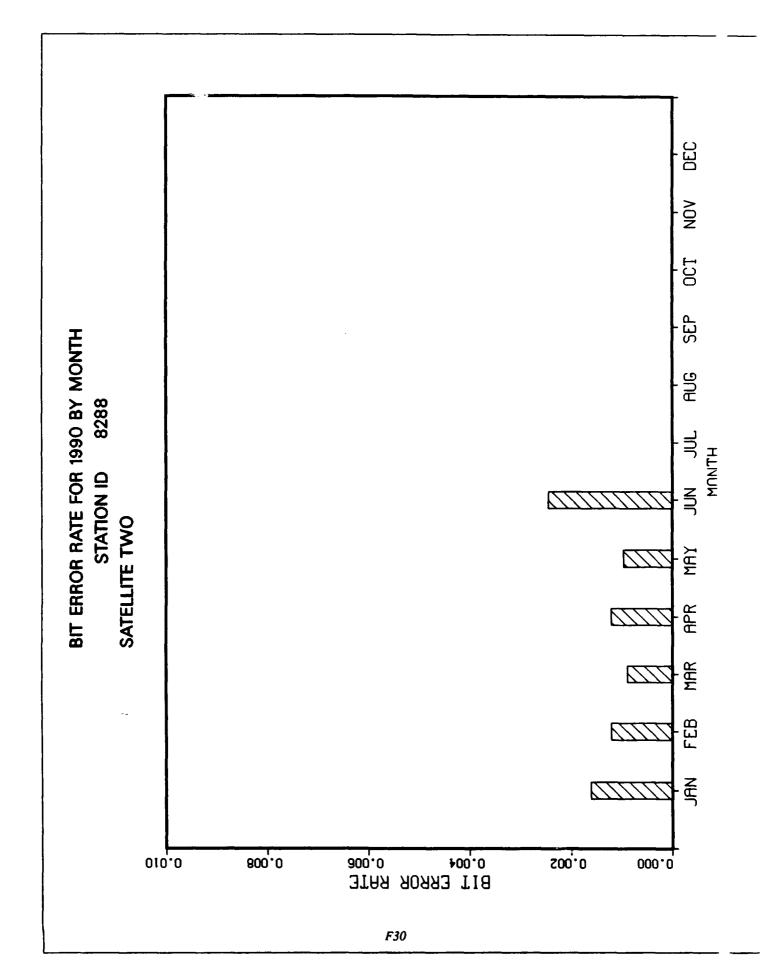


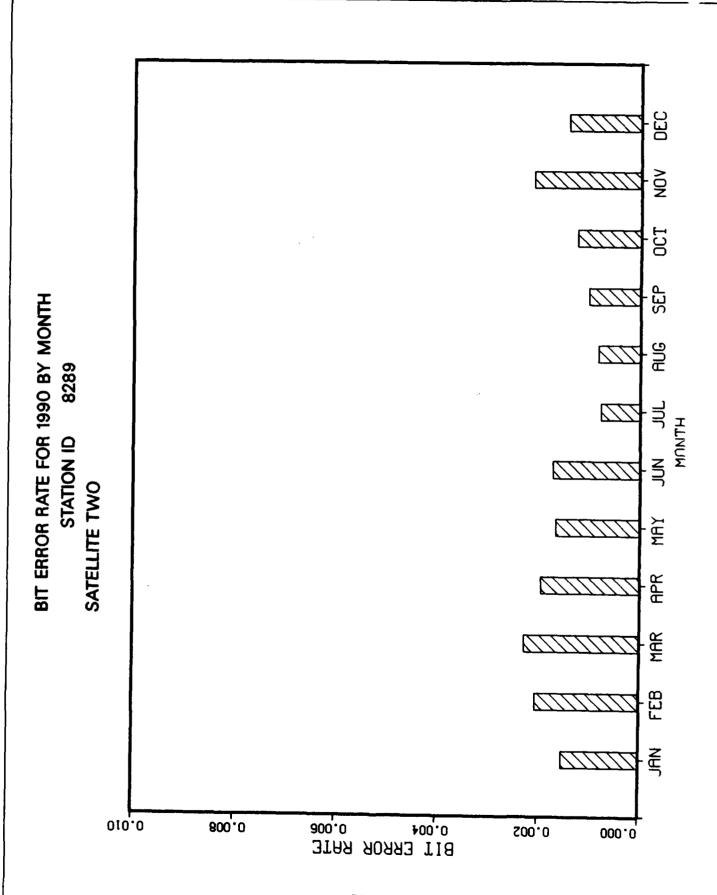


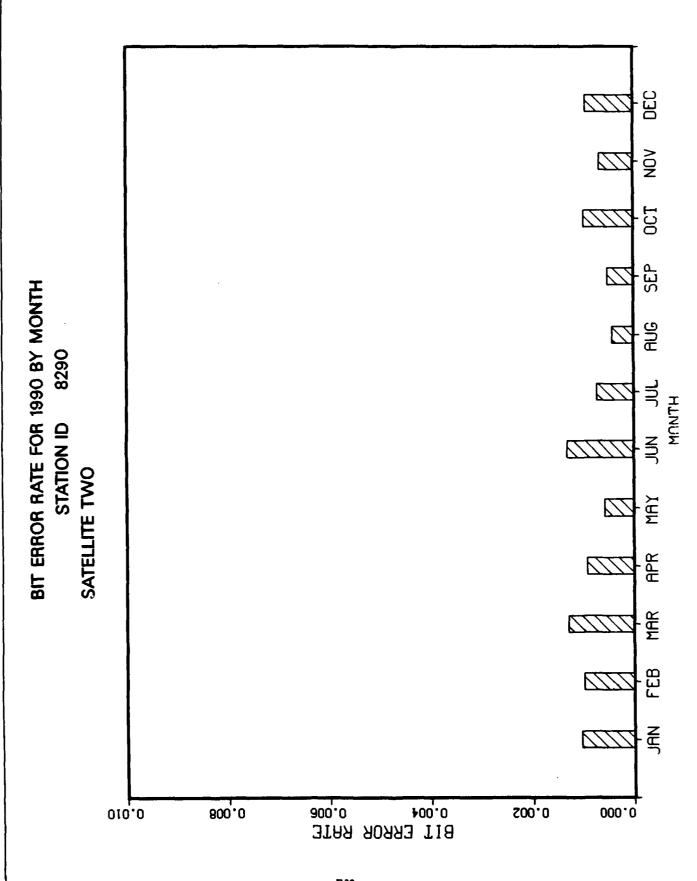


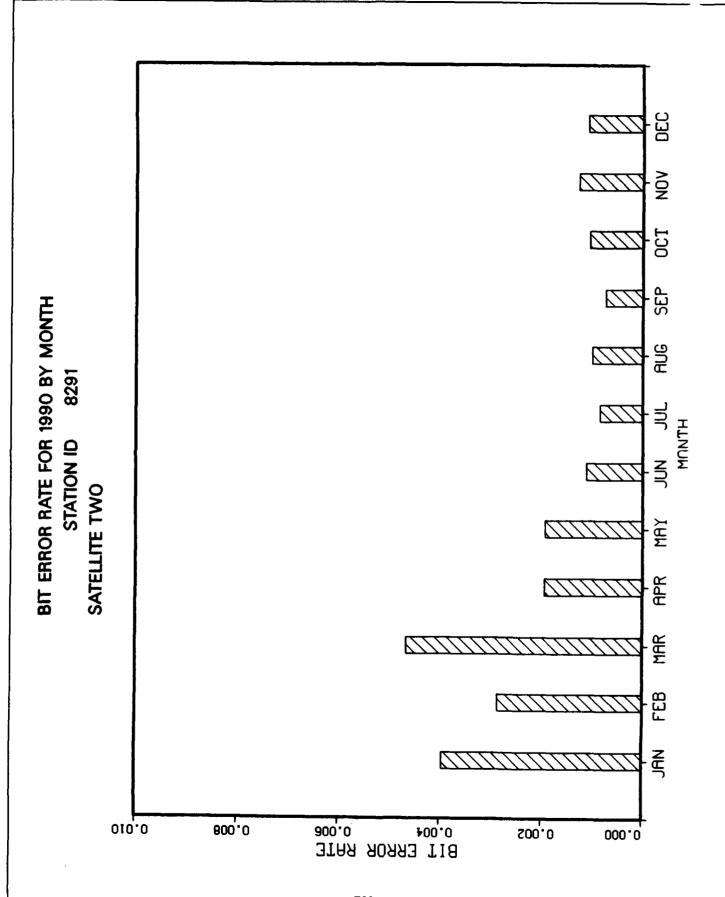


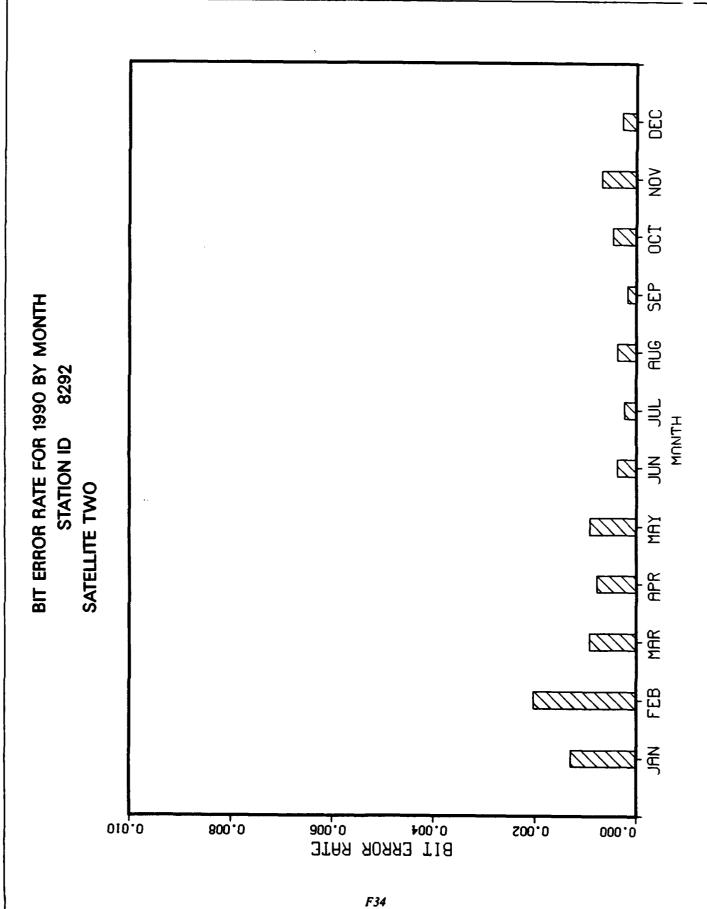


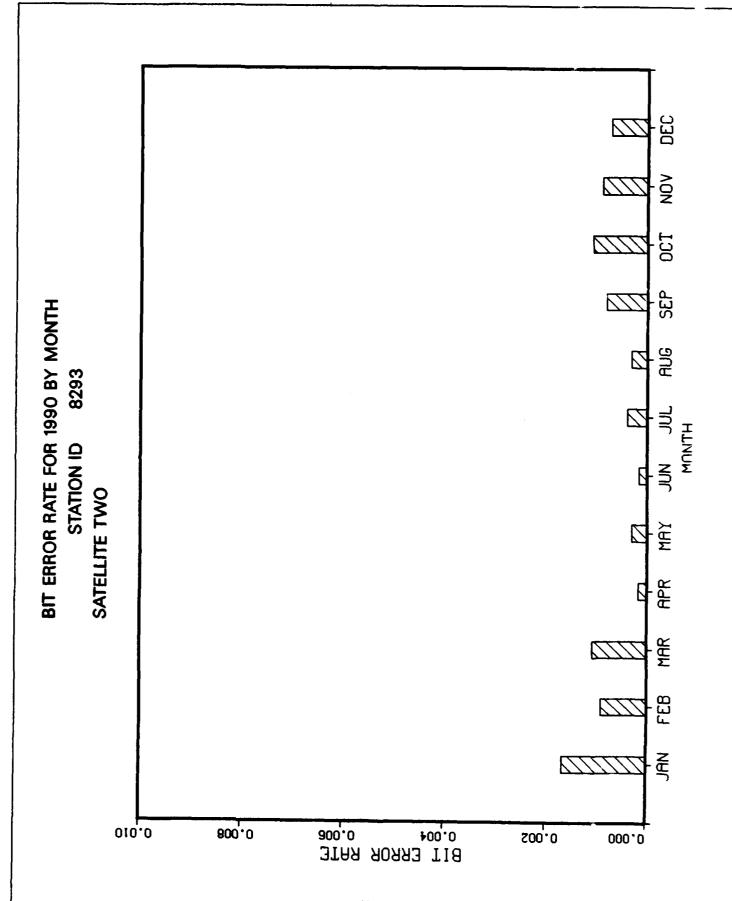


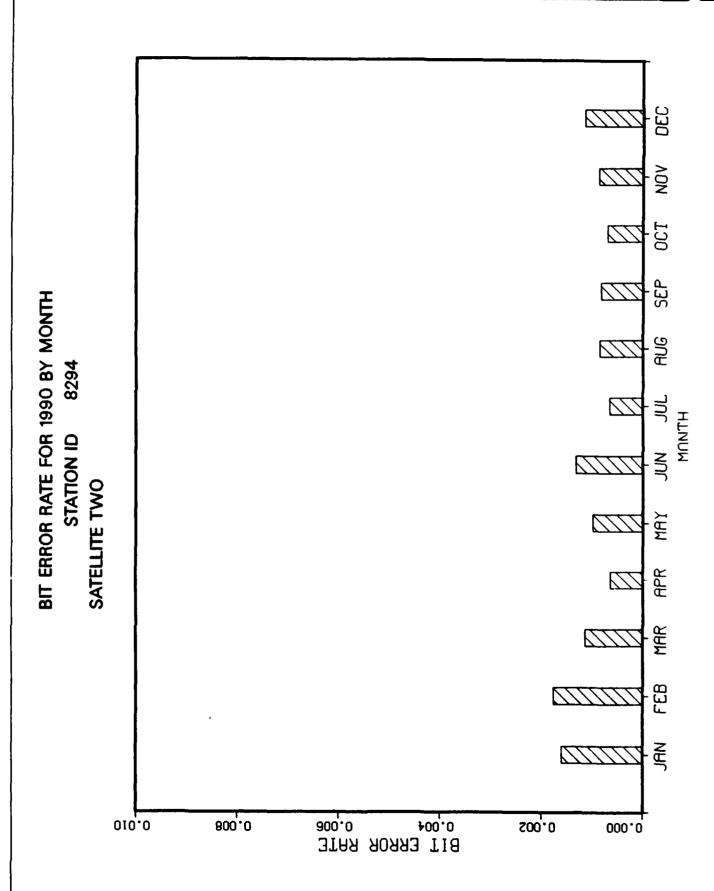


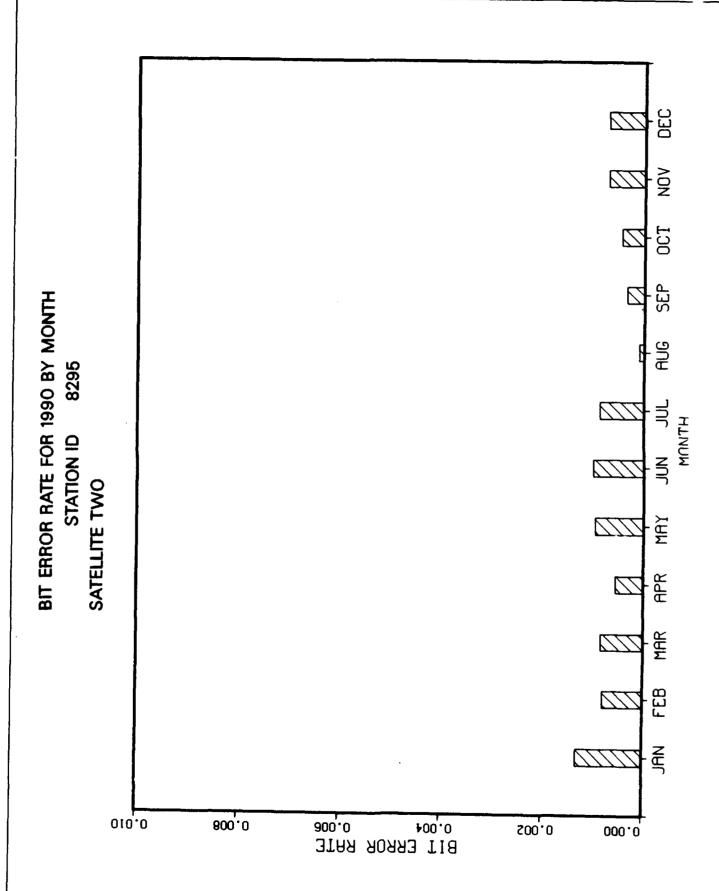


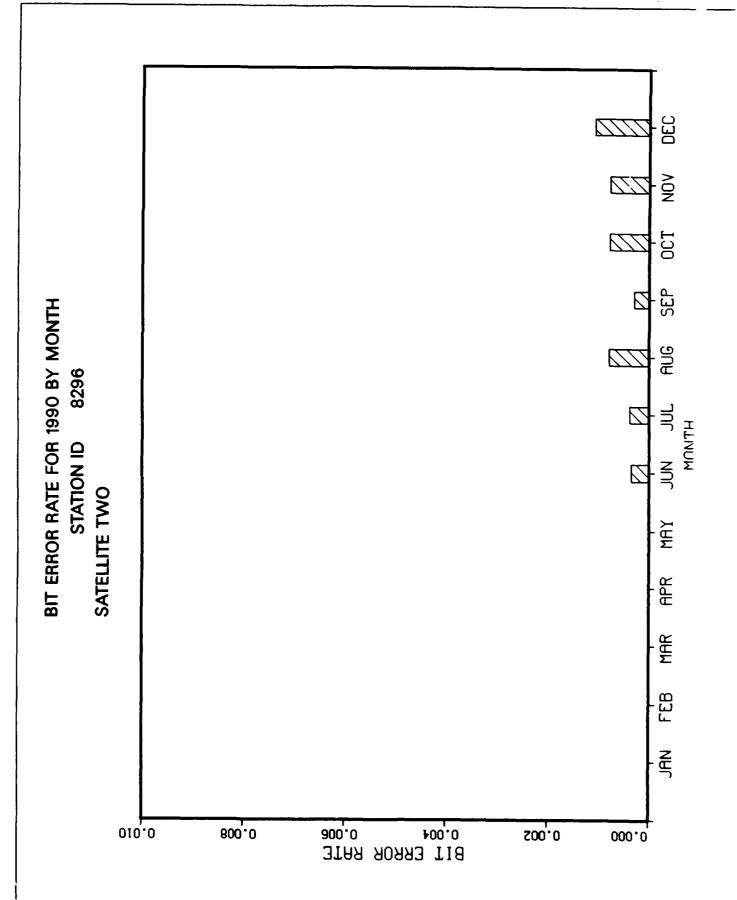


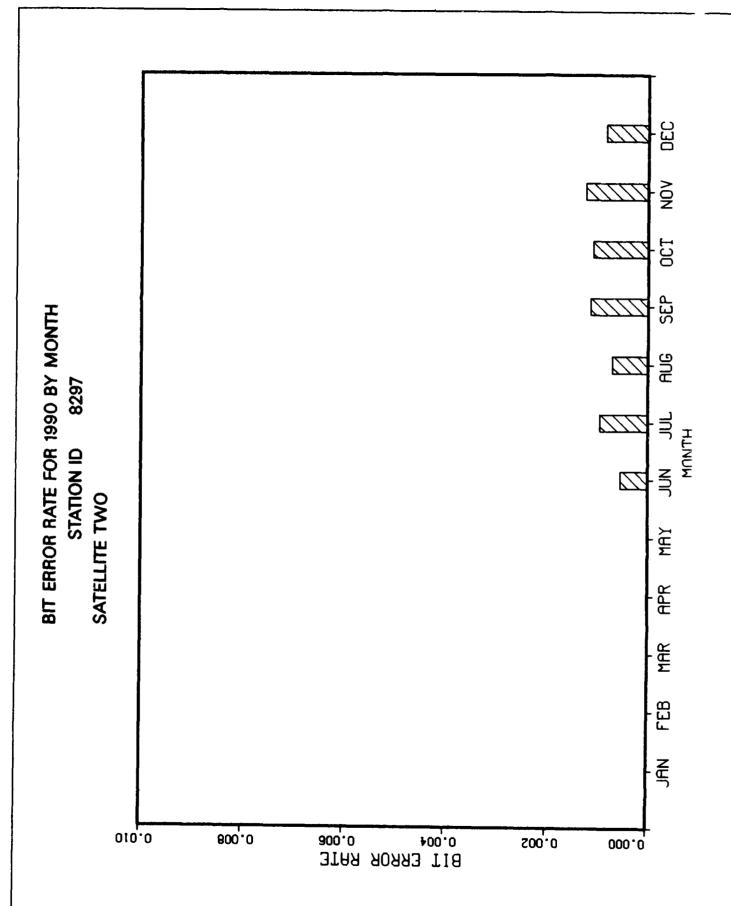


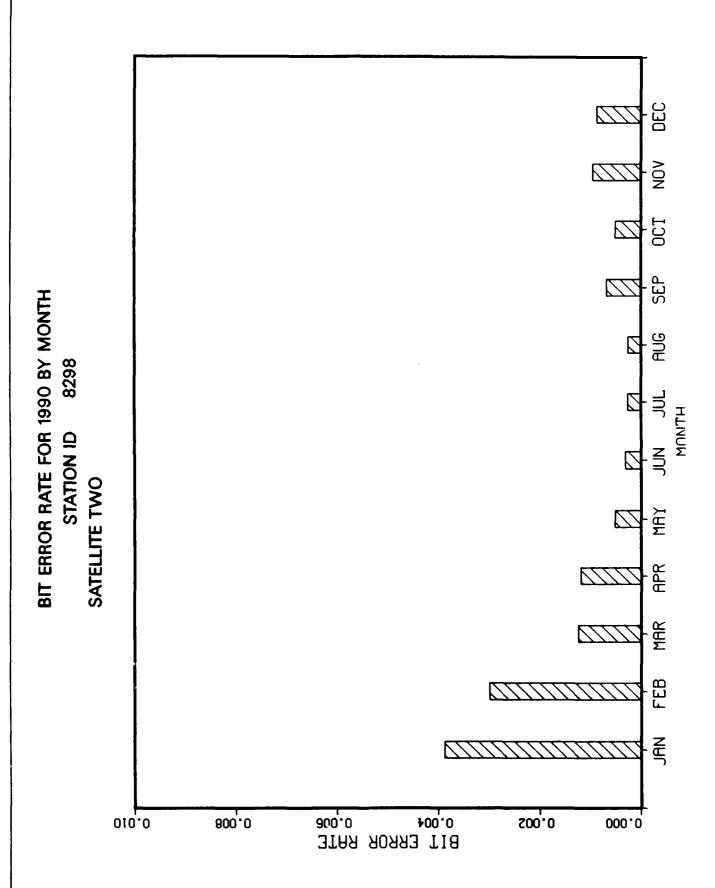


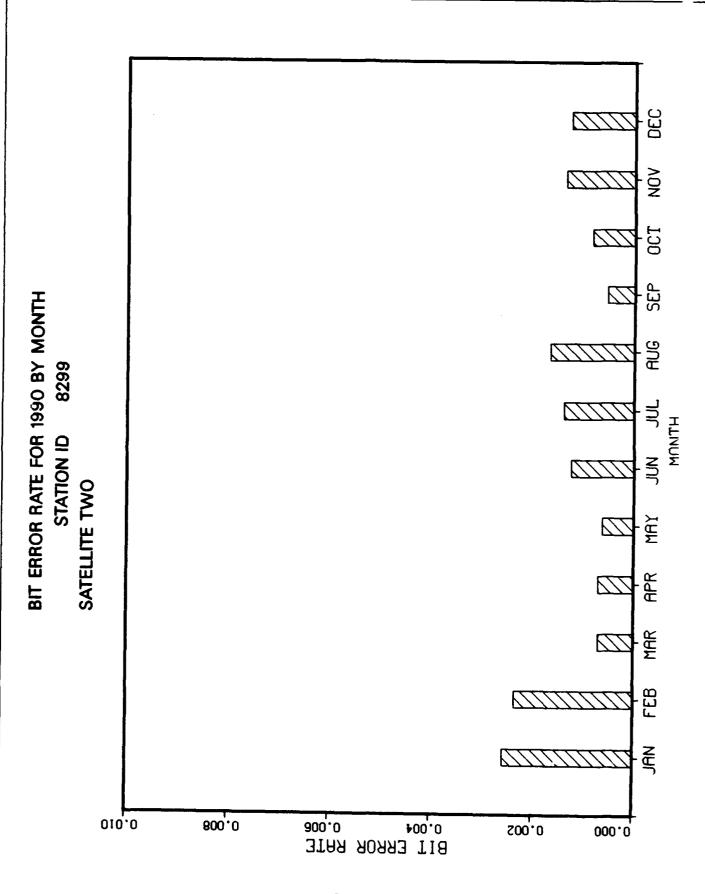


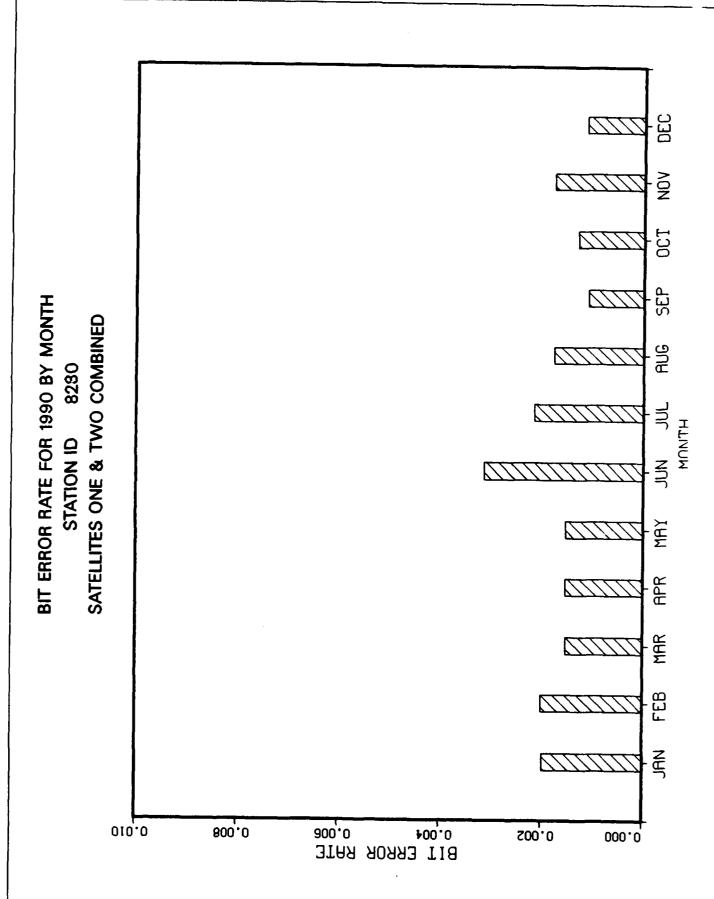


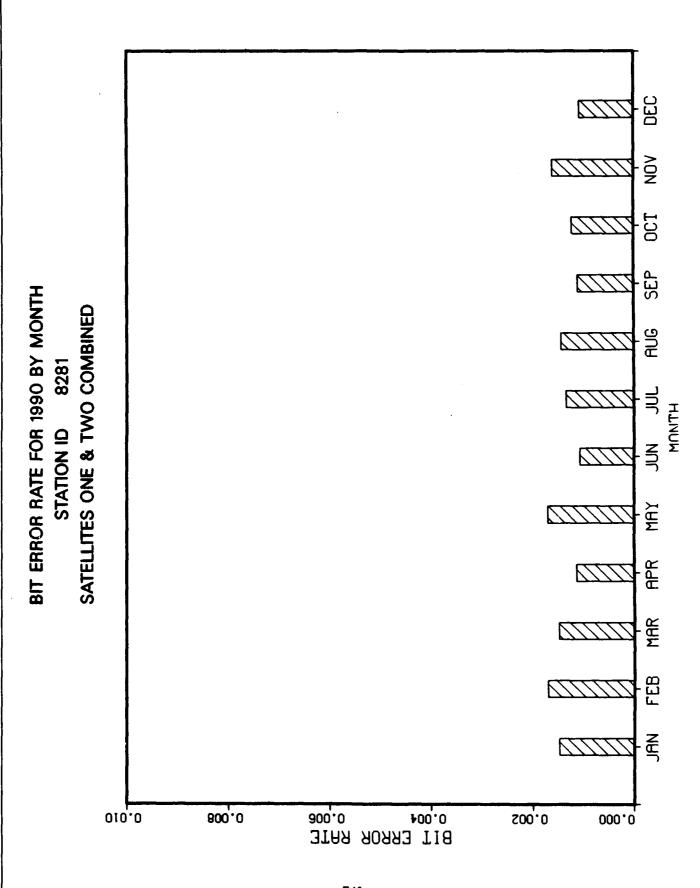


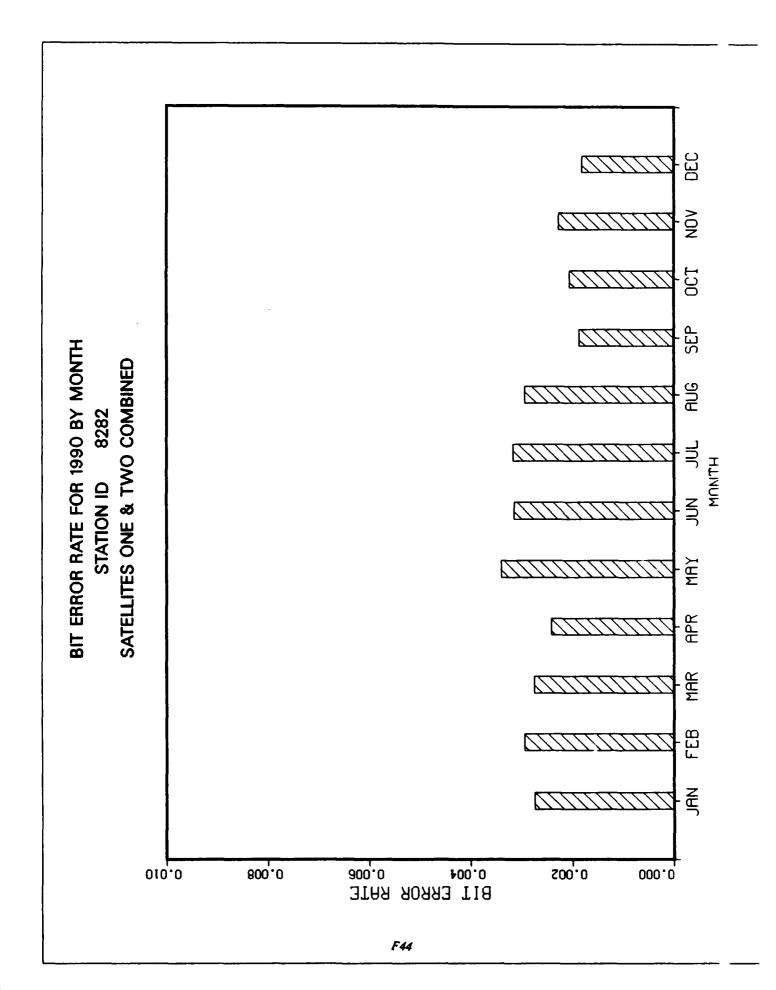


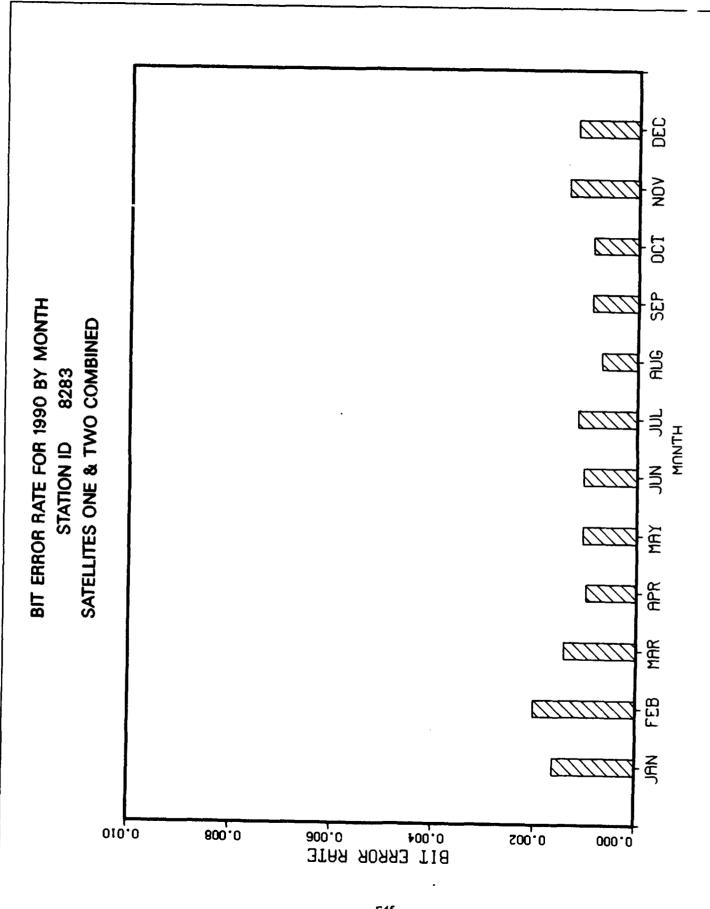


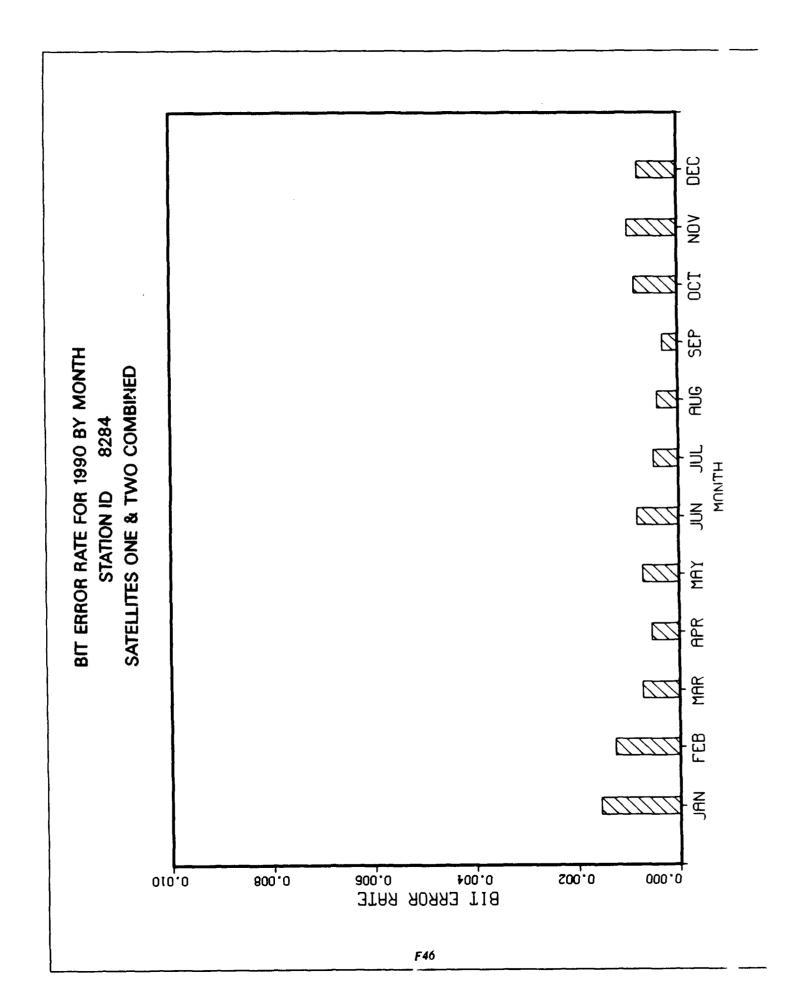


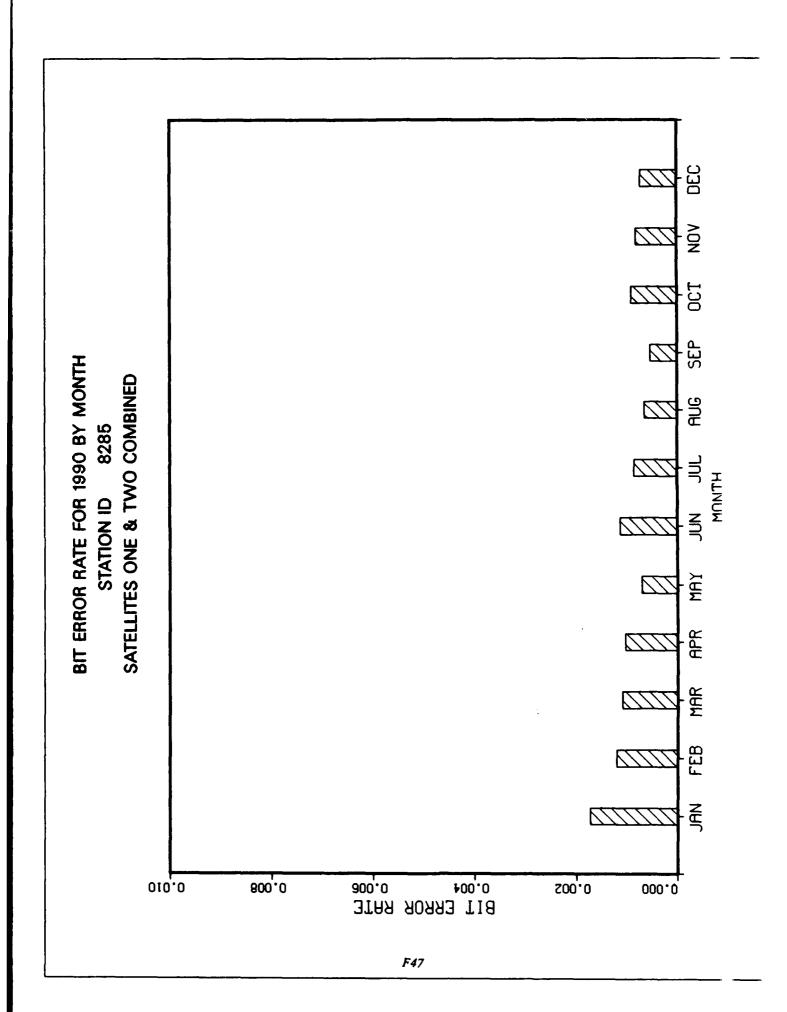


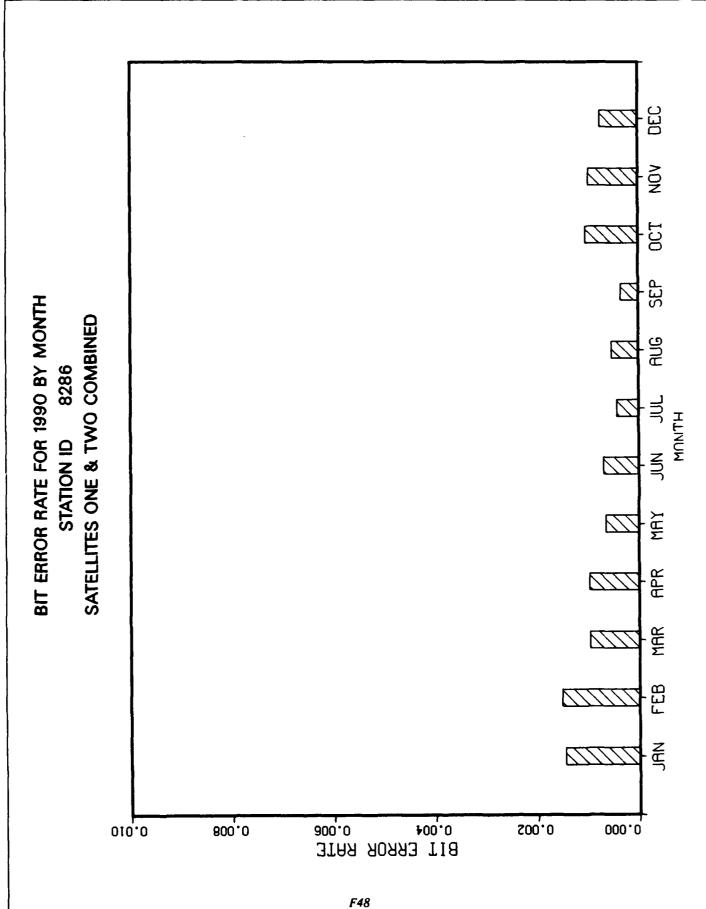


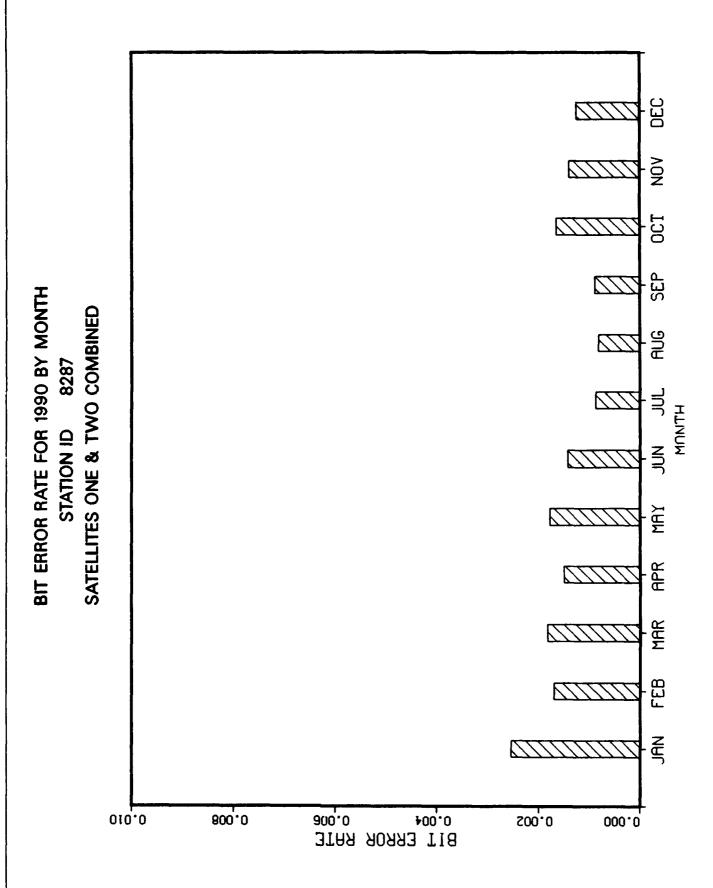


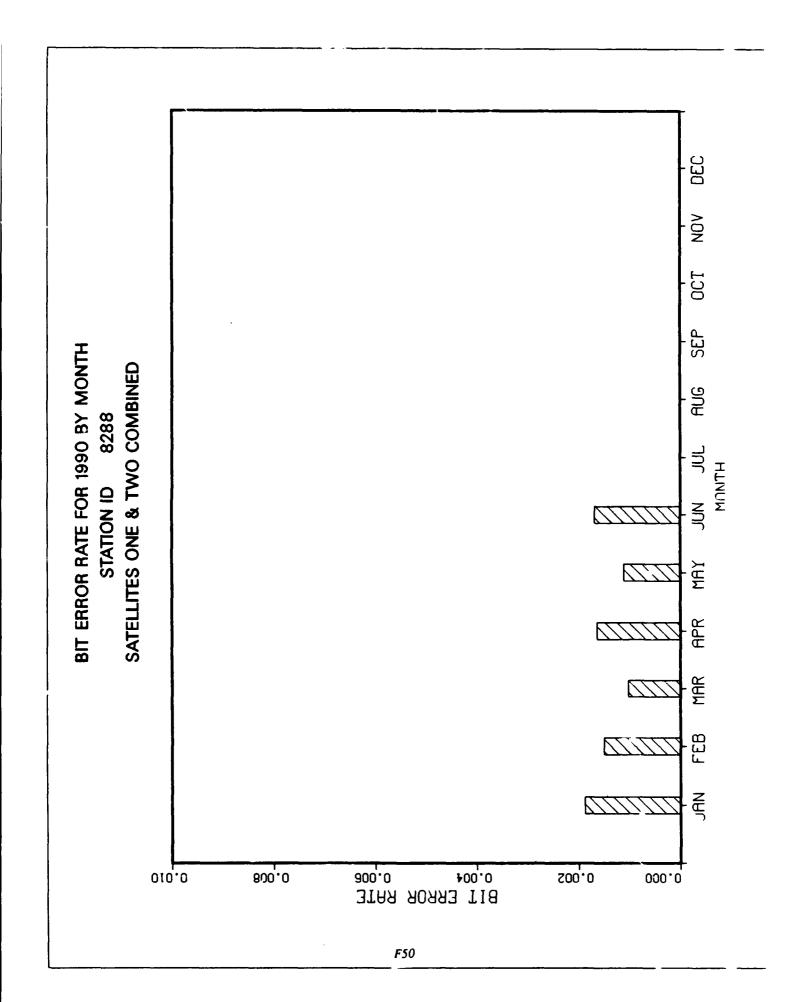


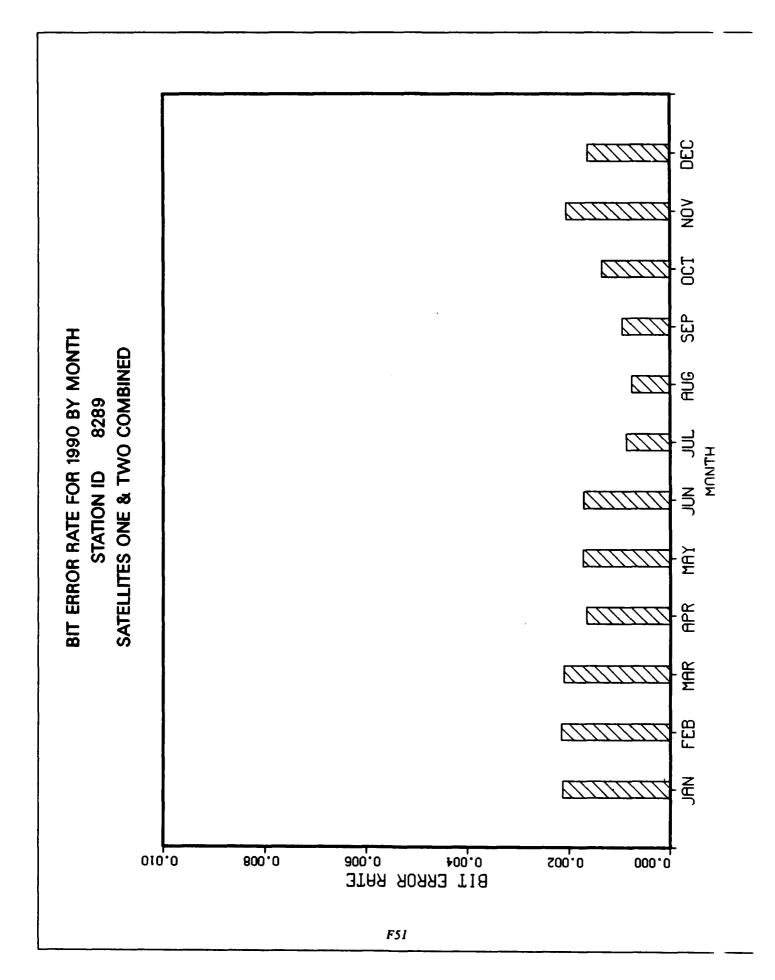


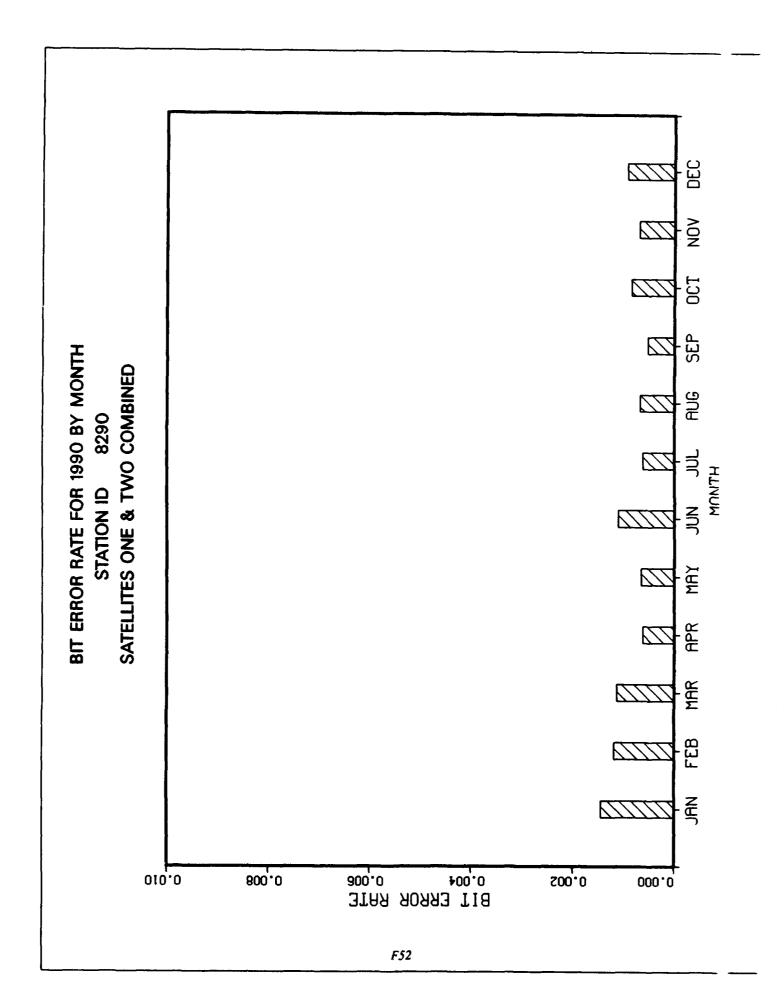


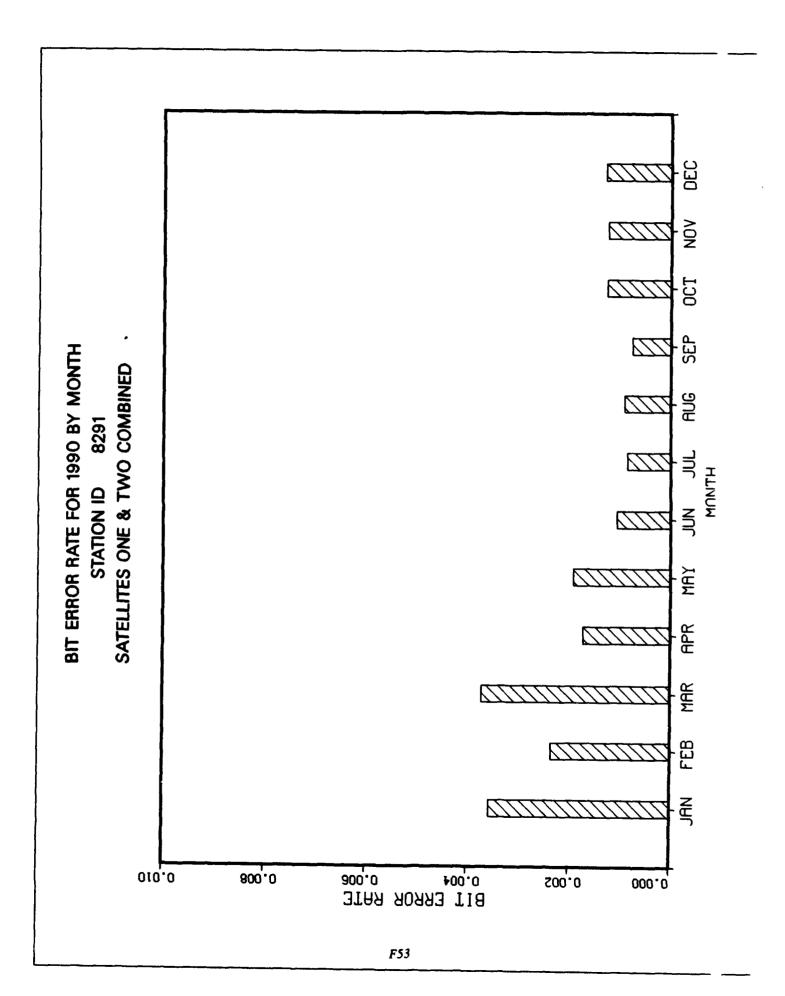


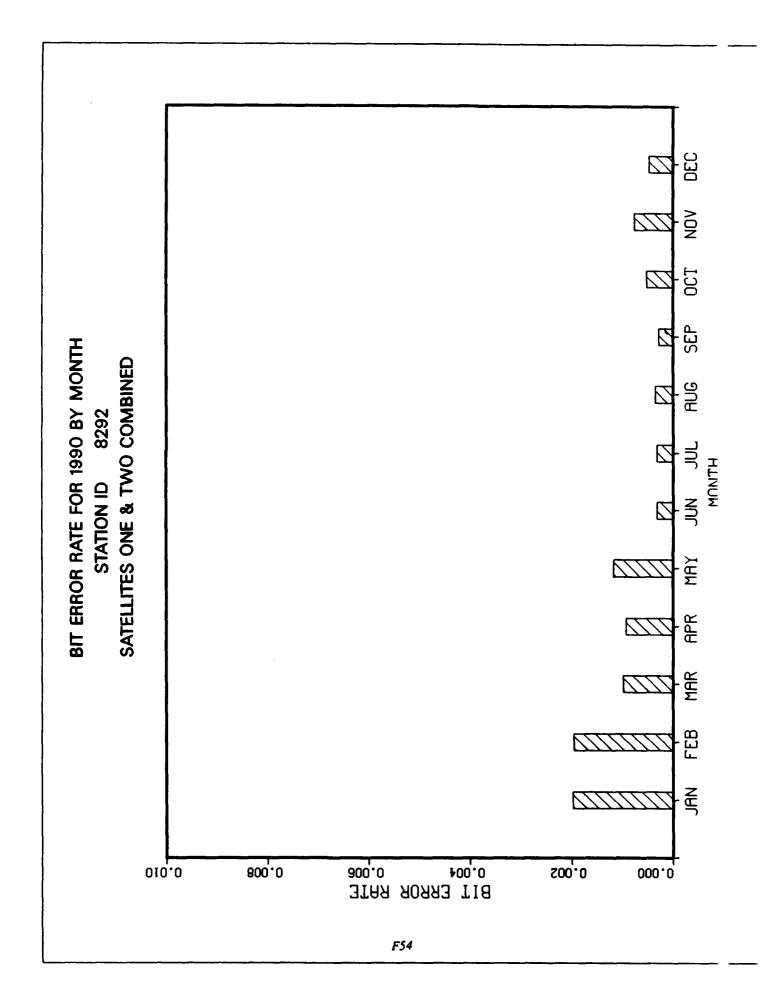


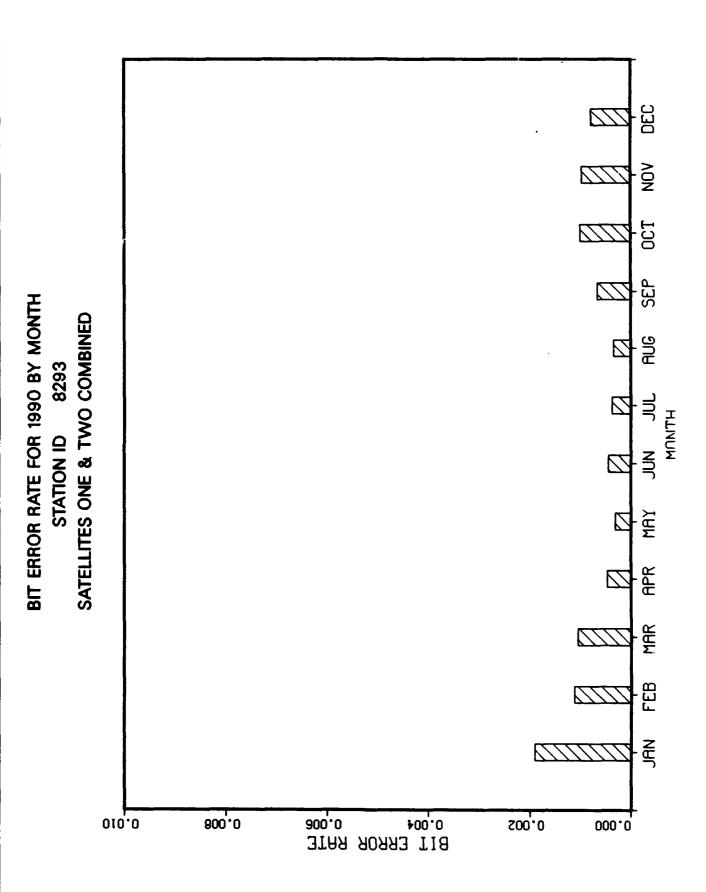


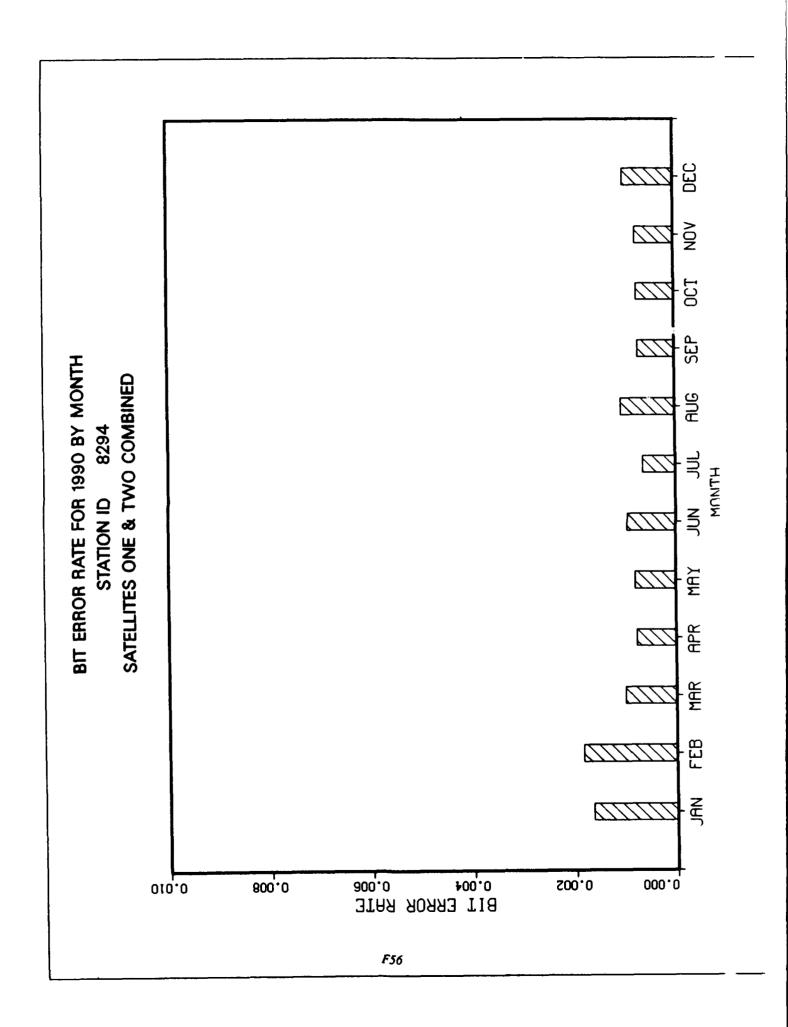


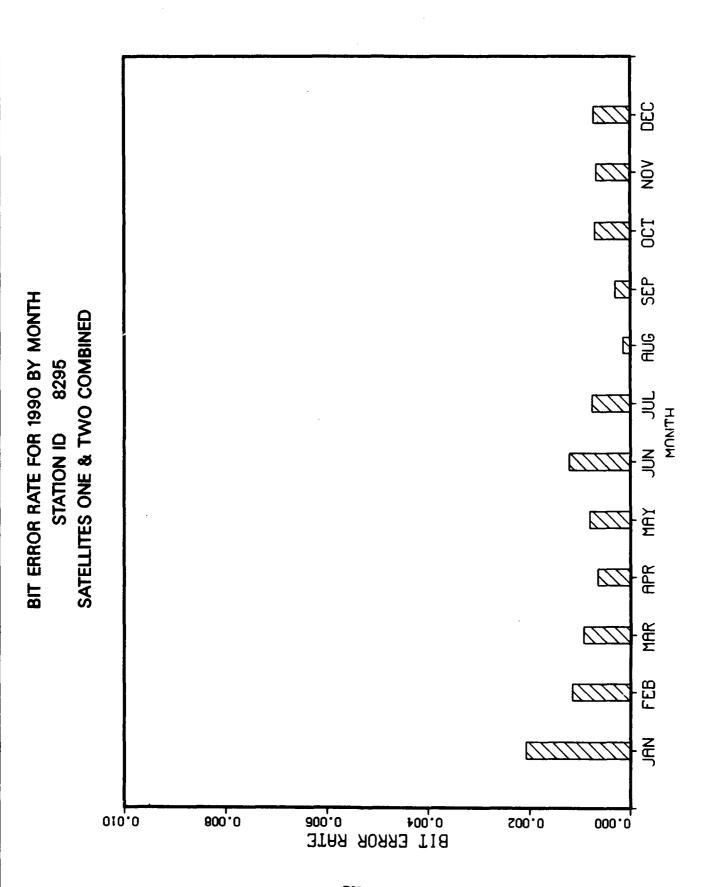


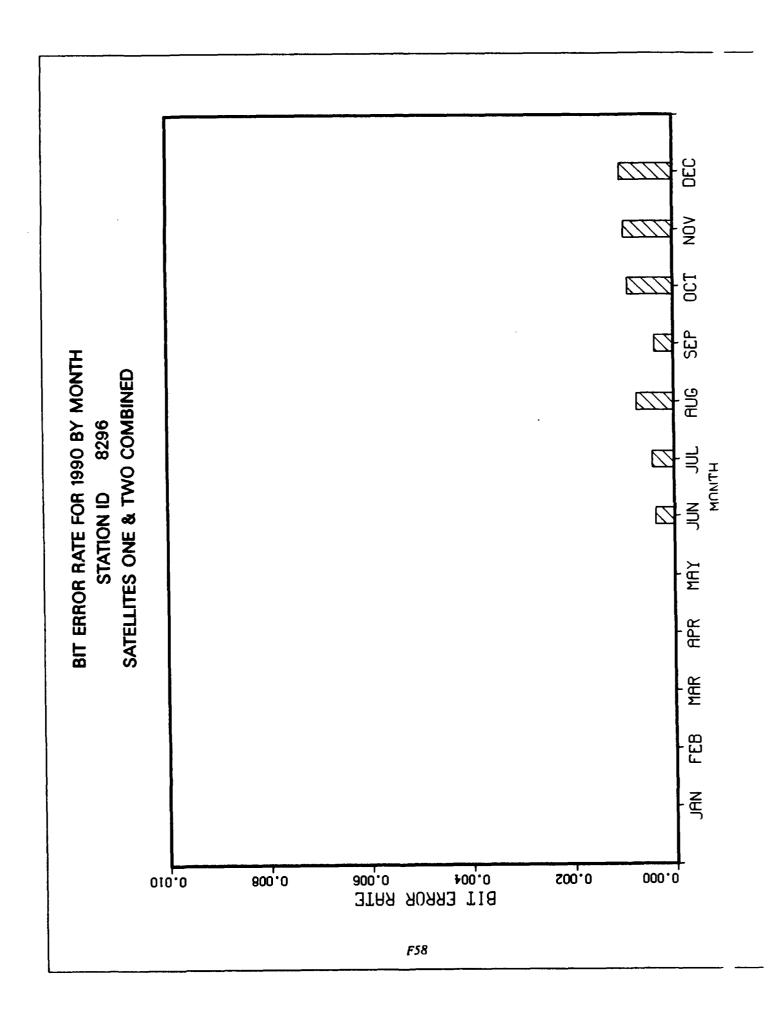


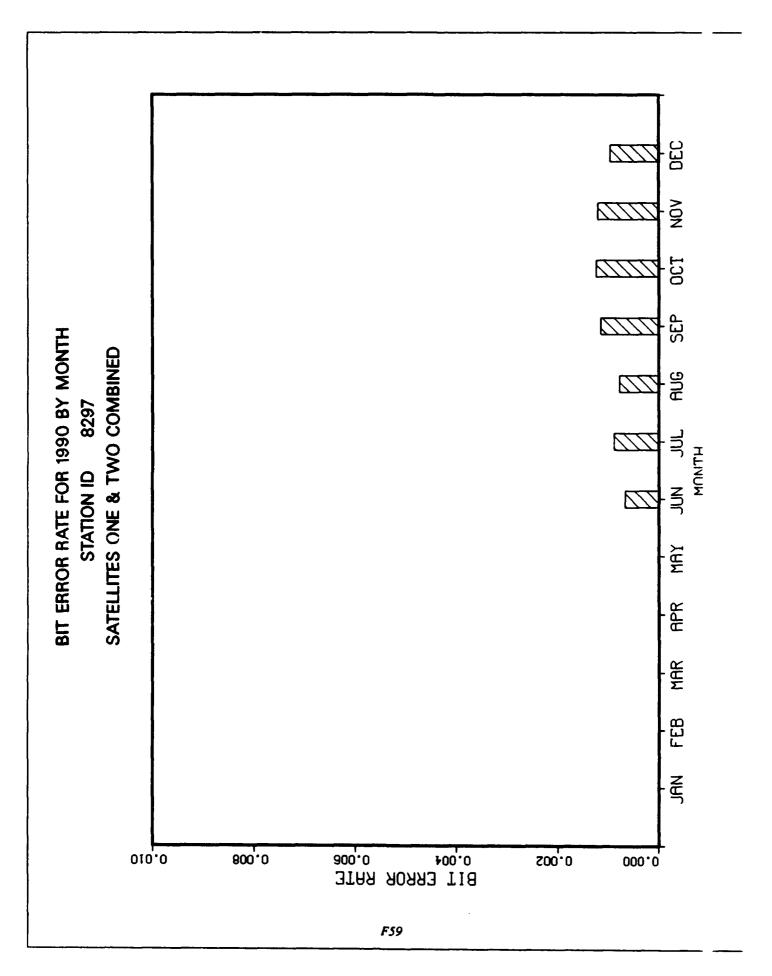


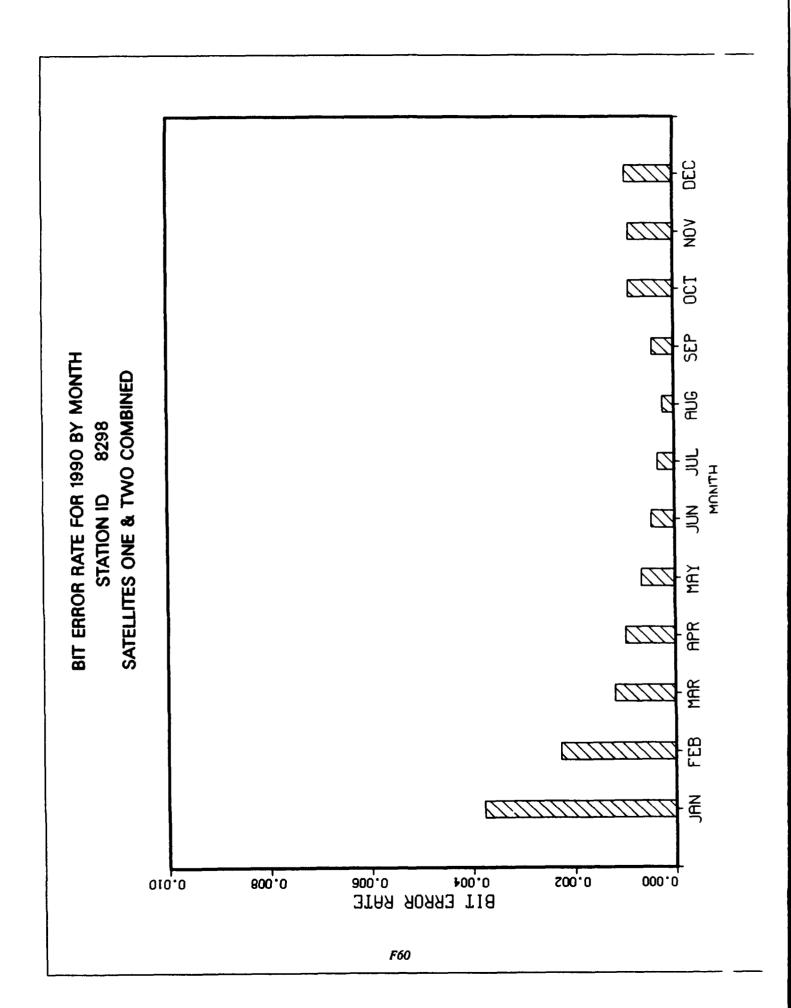


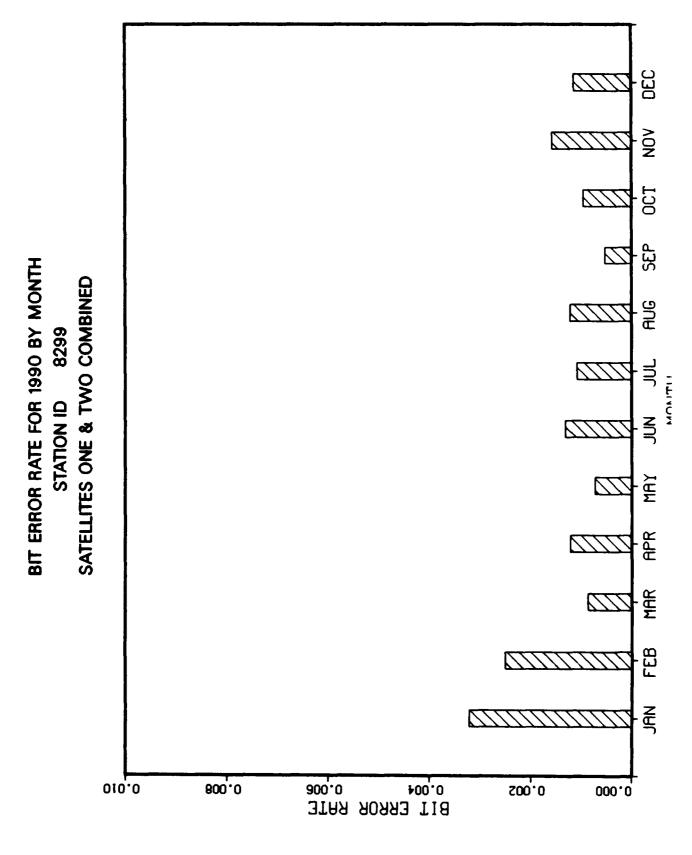






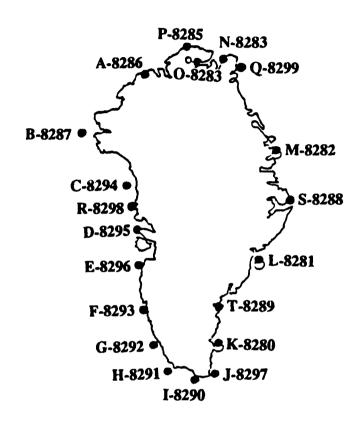




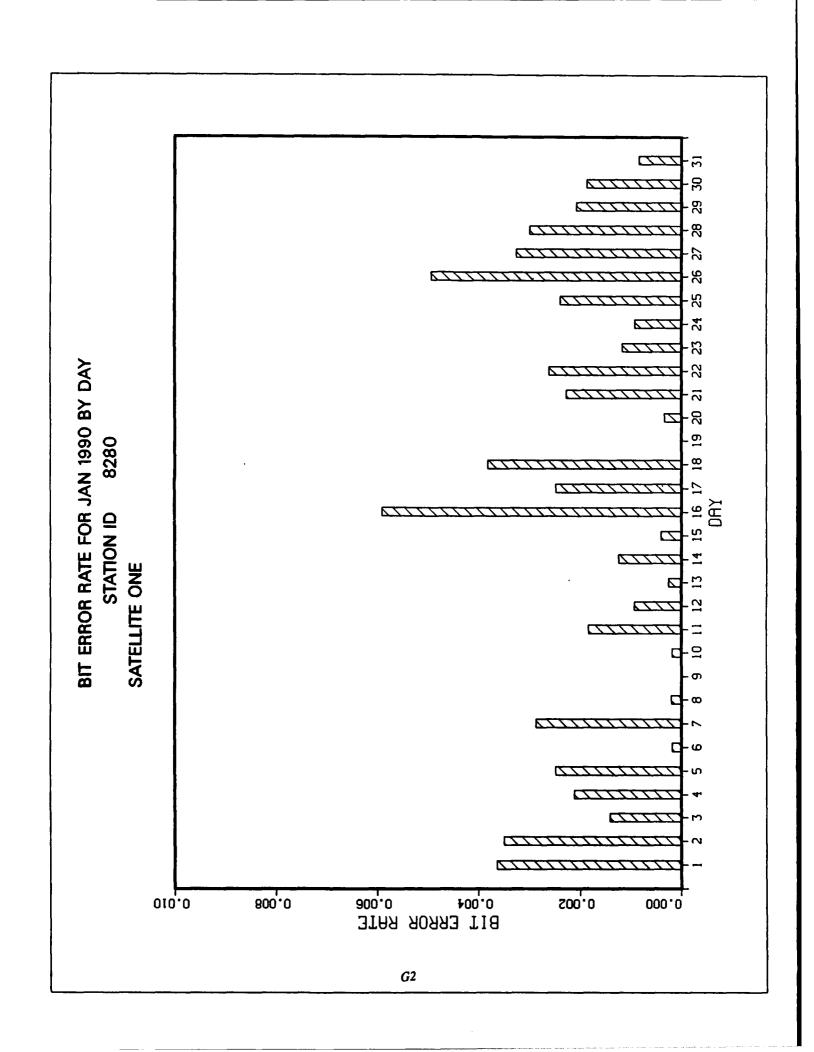


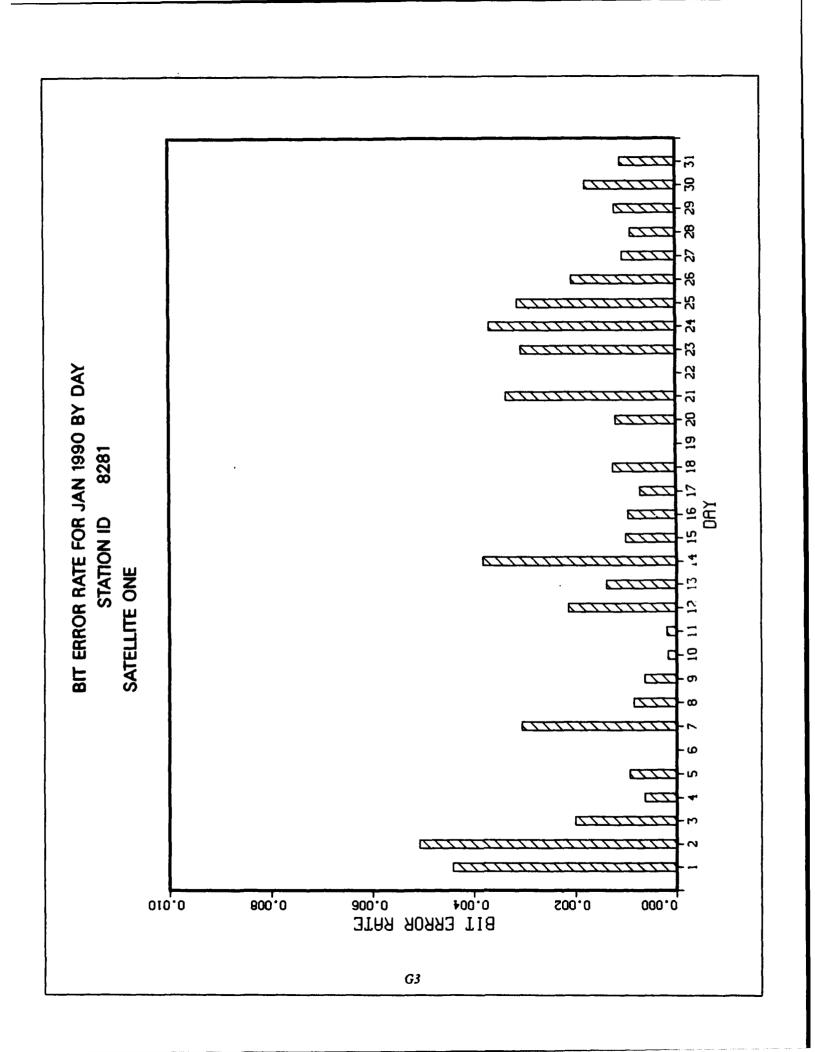
APPENDIX G

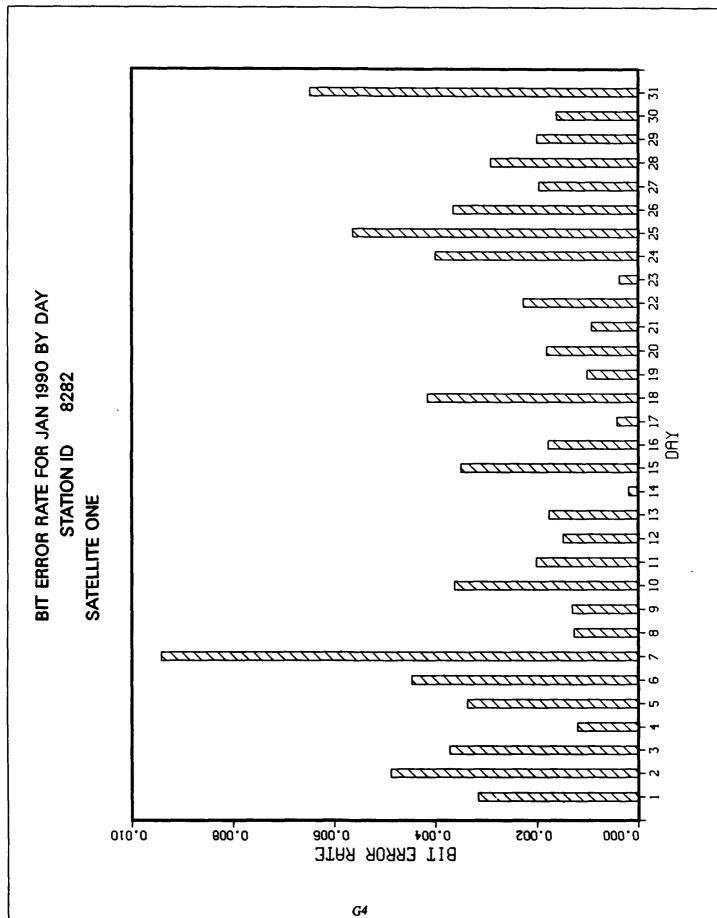
DAILY BIT-ERROR-RATE DATA FOR JANUARY 1990

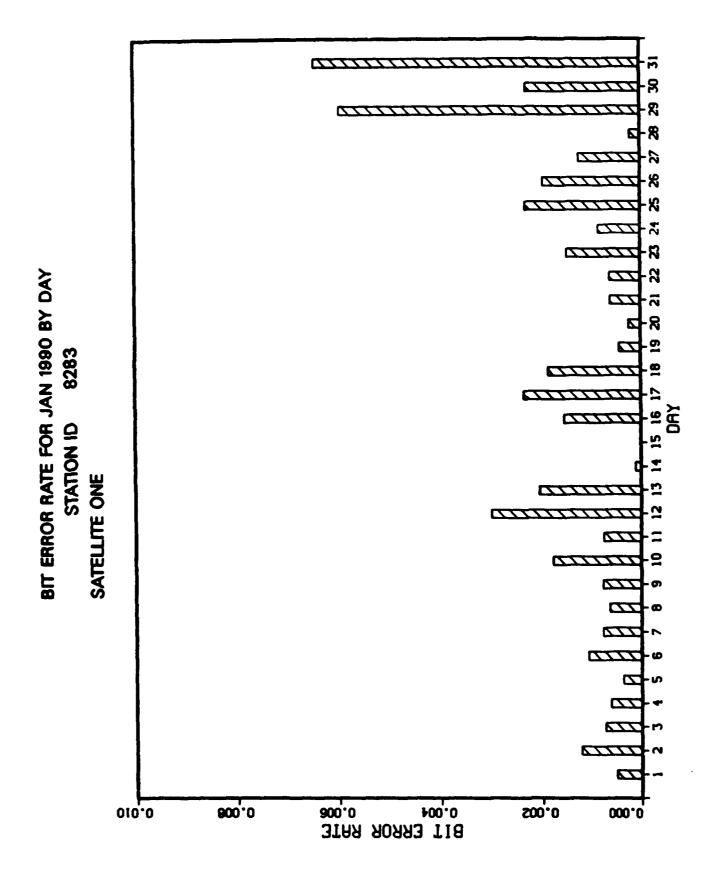


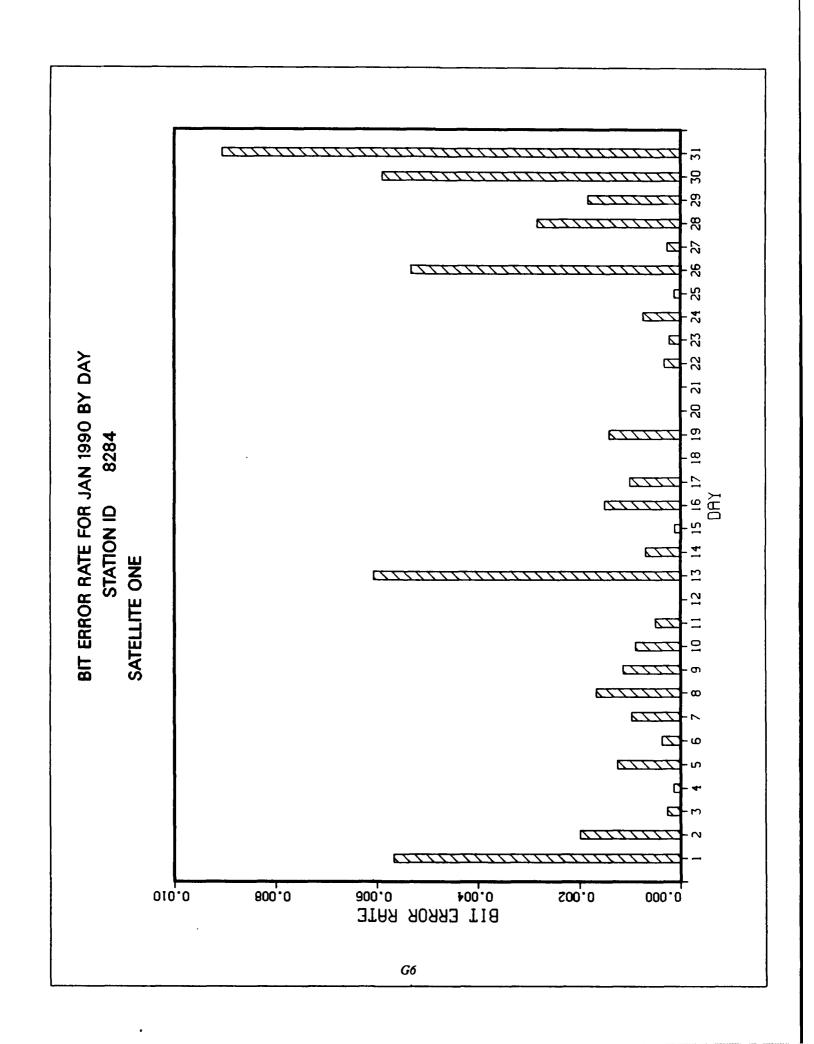
}	Station	Location	WHO-NR	Argos-MR	Established
A-		81-44'N,59-00'W	04-207	0206	jul.1982
8-	Carey Ser	76*38'N,73*00'W		8187	Aug.1979
C-	Edderfugledet	74*02'H, 57*49'W	04-206	8294	Sep.1981
D-	Mugssuaq	70-41'H,54-37'W	04-214	8295	Aug.1982
E-		67*47'H, 53*58'W	:	8296	Aug. 1983
F-	,	65*01'N,52*33'W	:	8293	Jun. 1983
G-	Frd.håbs Isblink	62*34'N,50*25'¥	:	8292	Jun. 1982
H -	Munerssuit	60-46'N,48-25'Y	:	8271	Jun. 1981
I -	Angissoq	59°59'H,45°12'W	:	8290	Jun.1981 Okt.1982
J-	Prins Chr.sund	60-02'N, 43-07'W	:	8297	Aug. 1978
K-	Ikermierssuk	61*56'N, 42*04'W	:	9291	Aug. 1978
L-	Aputiteq	74*18'N. 20*13'W	:	8282	Aug. 1978
M- N-	Deneborg Station Word	81-36.H' 19-40.A	:	8283	Sep. 1979
0-	Kep Hereld Holtke		:	8264	Aug.1979
P -	Kep Merris Jessup	:	•	8285	Jul. 1979
S-	Kep Tobin	70-25'H, 21-58'W	i.	8298	Aug. 1985
T-	Ikereit	64-47'H, 40-18'W	04-373	8287	Okt.1986
Q-	Krøyers Holme	80-41 .H. 13-55.A	04-313	4299	Jul. 1984
Ř-	Upernavik	72-47'N, 56-10'W	04-209	8298	Aug. 1984

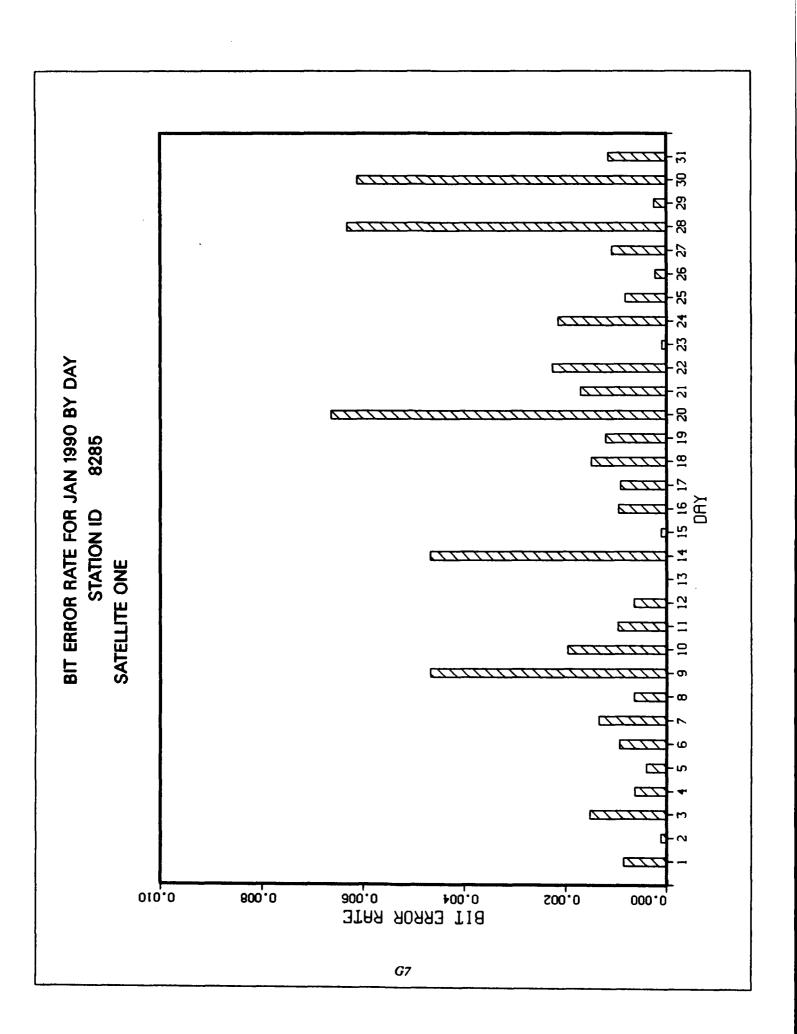


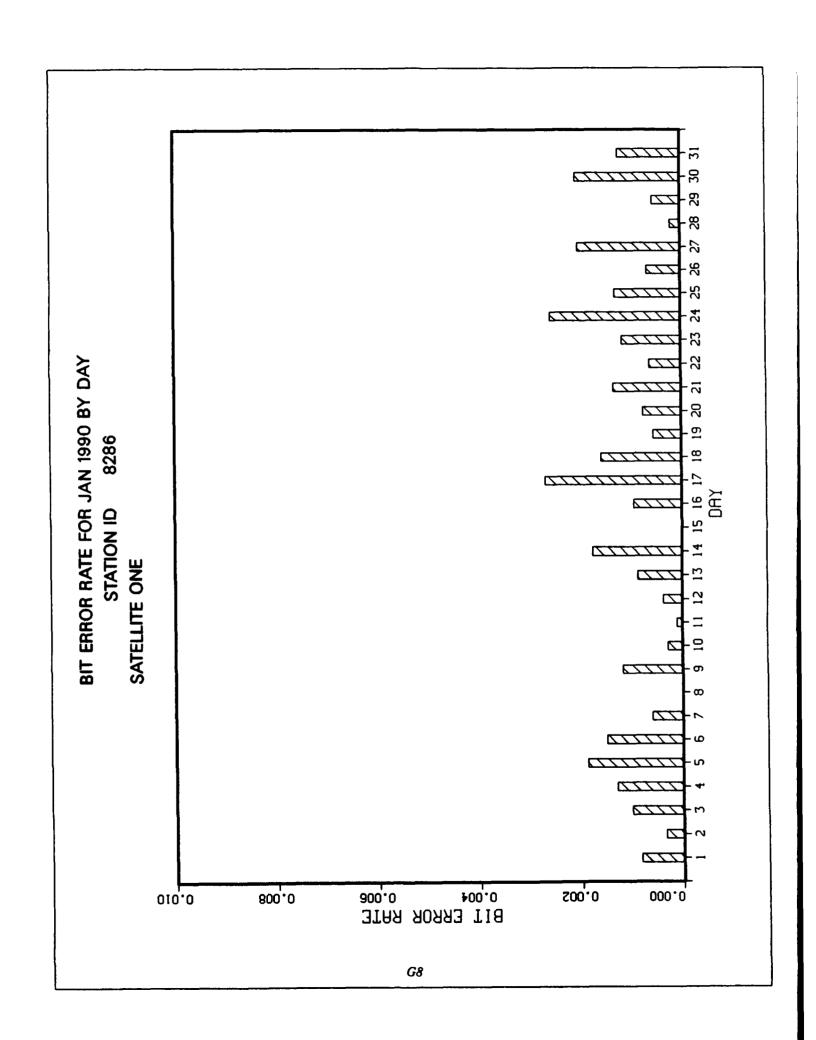


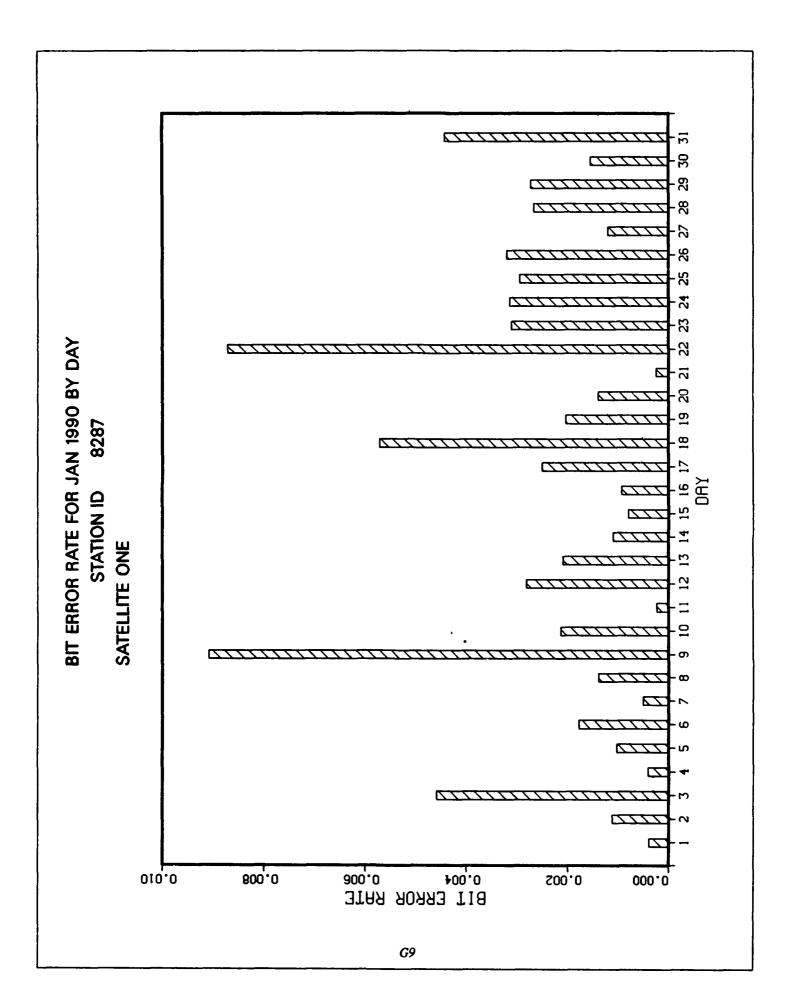


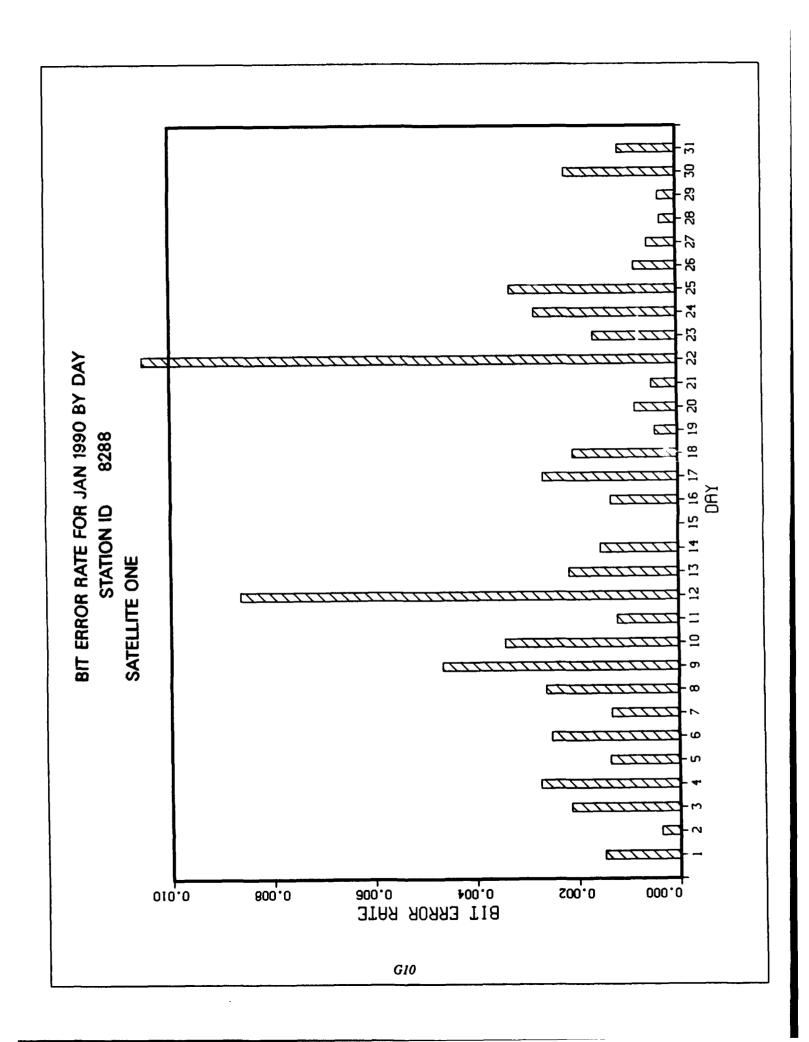


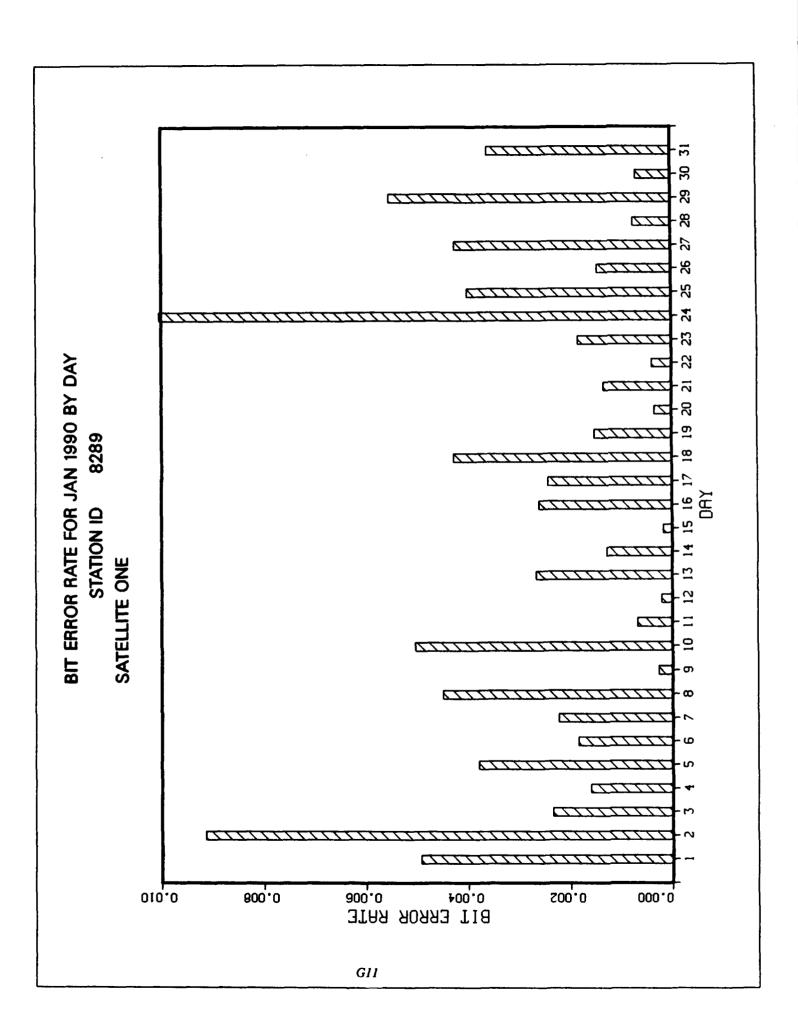


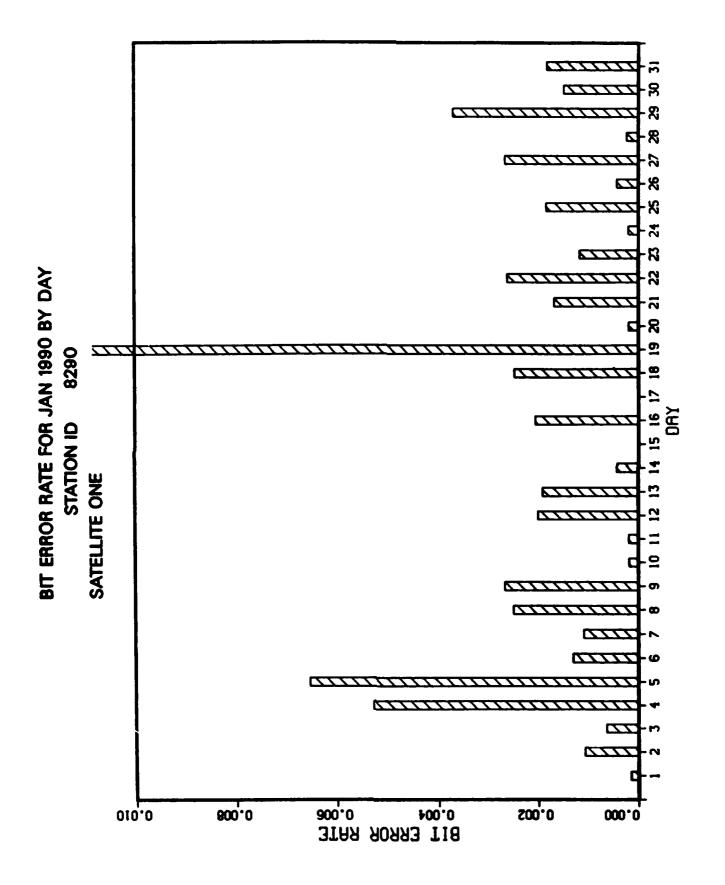


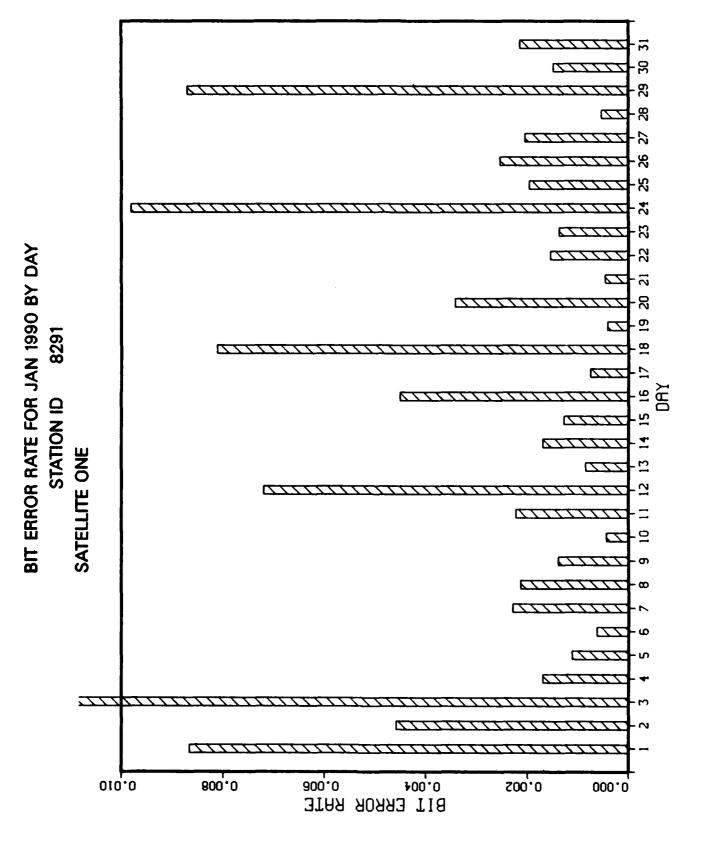


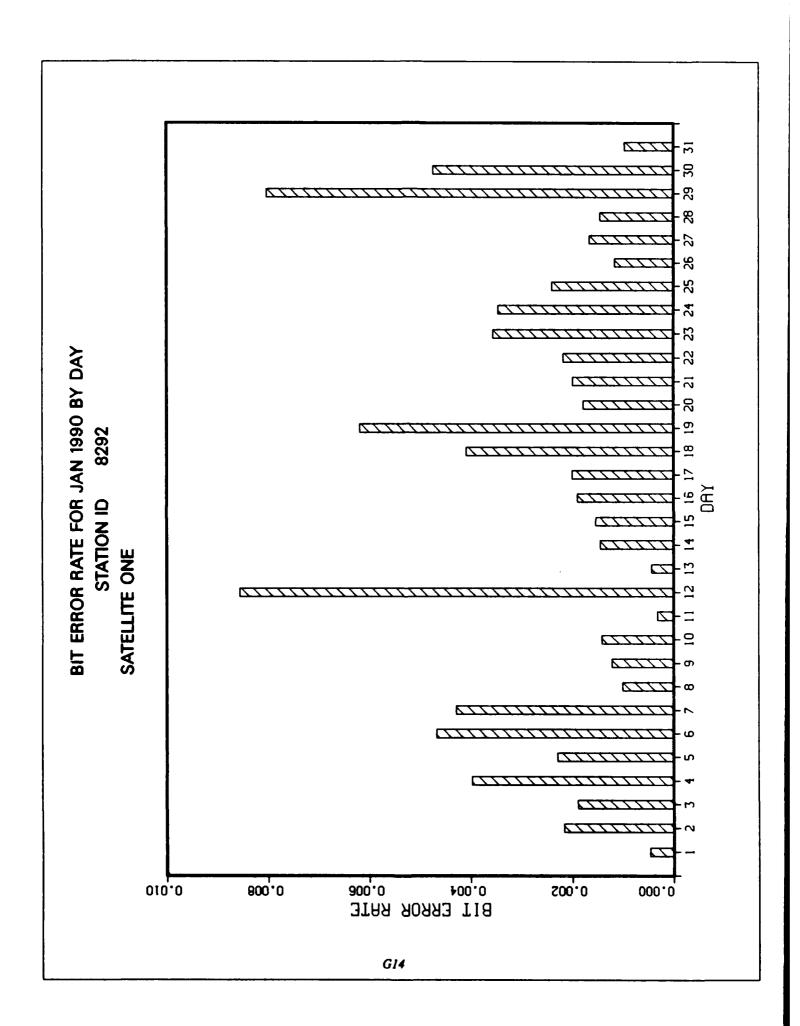


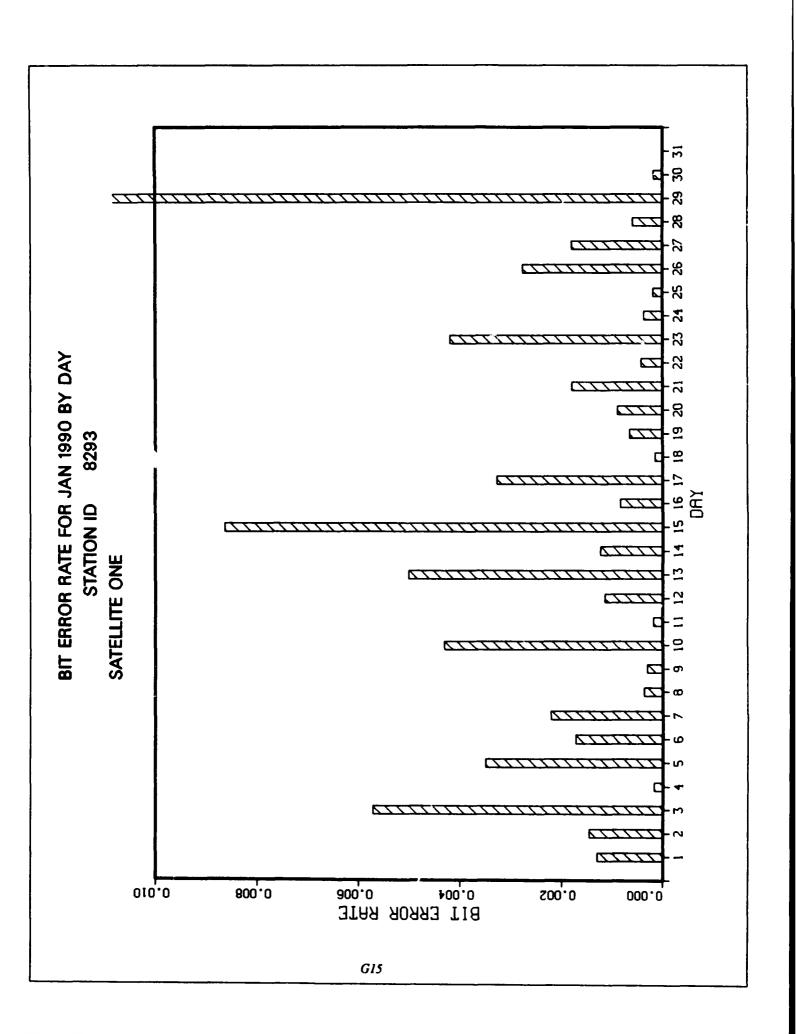


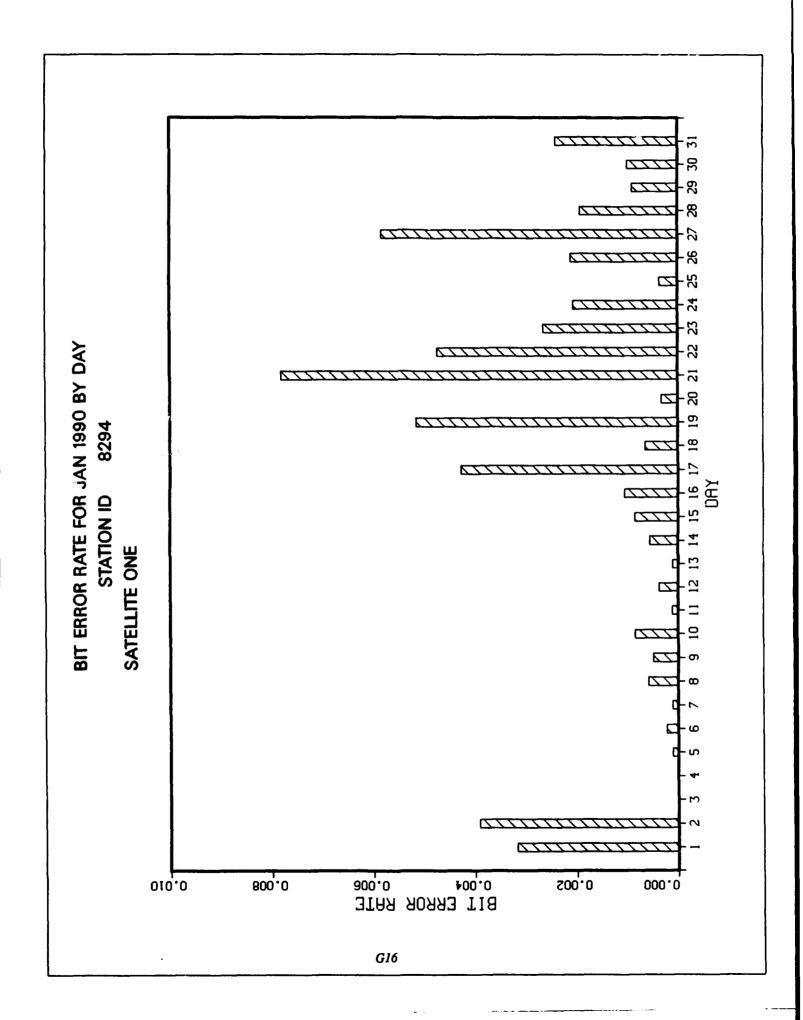


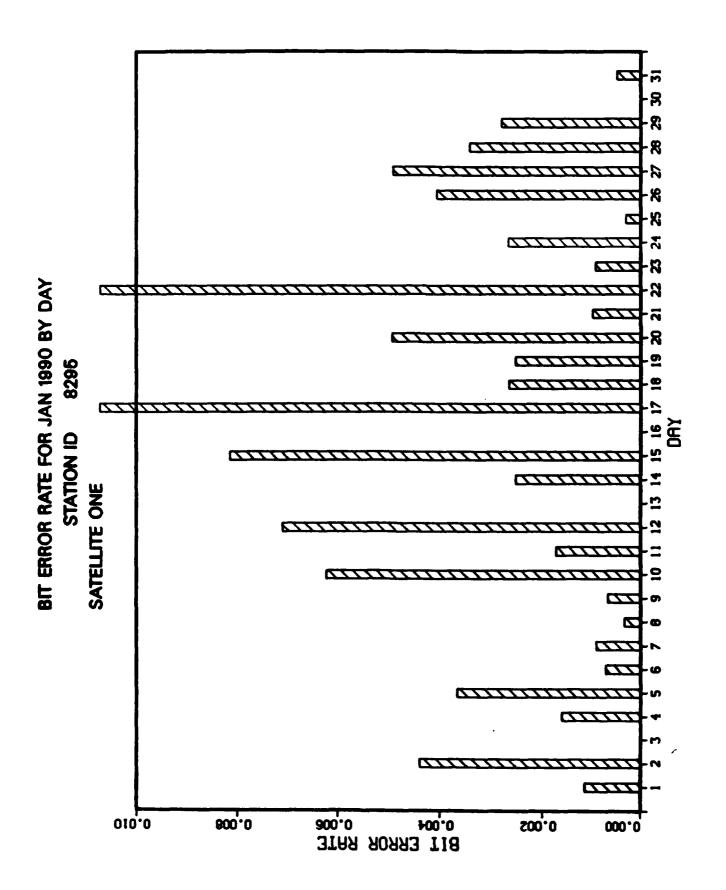


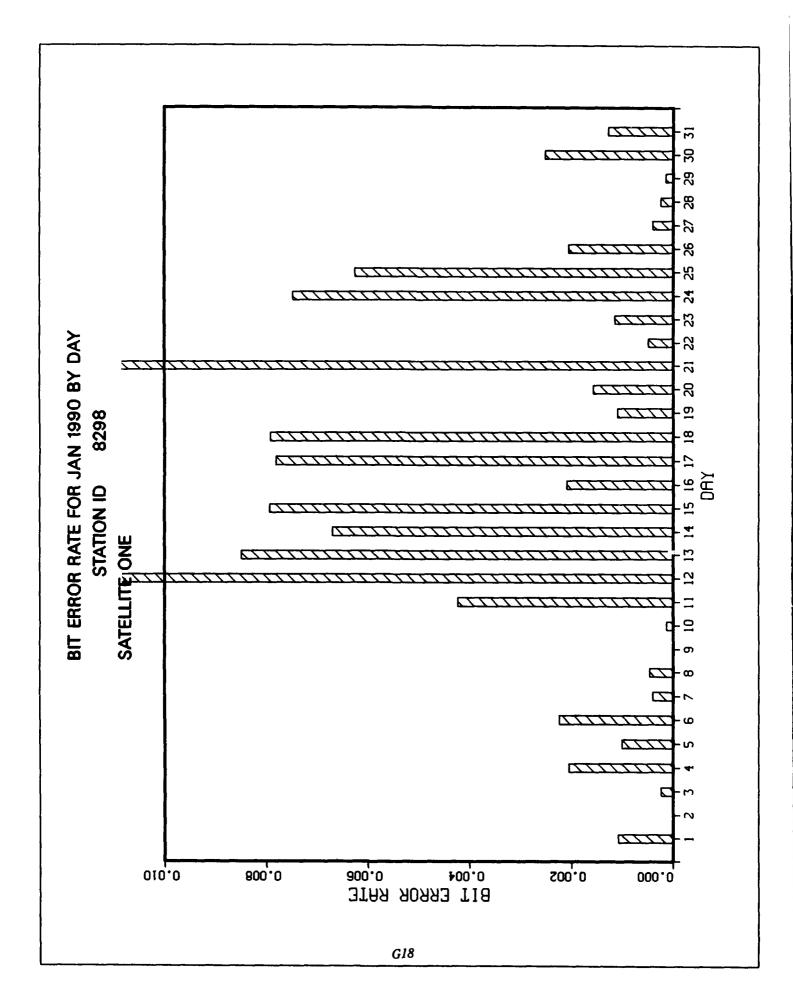


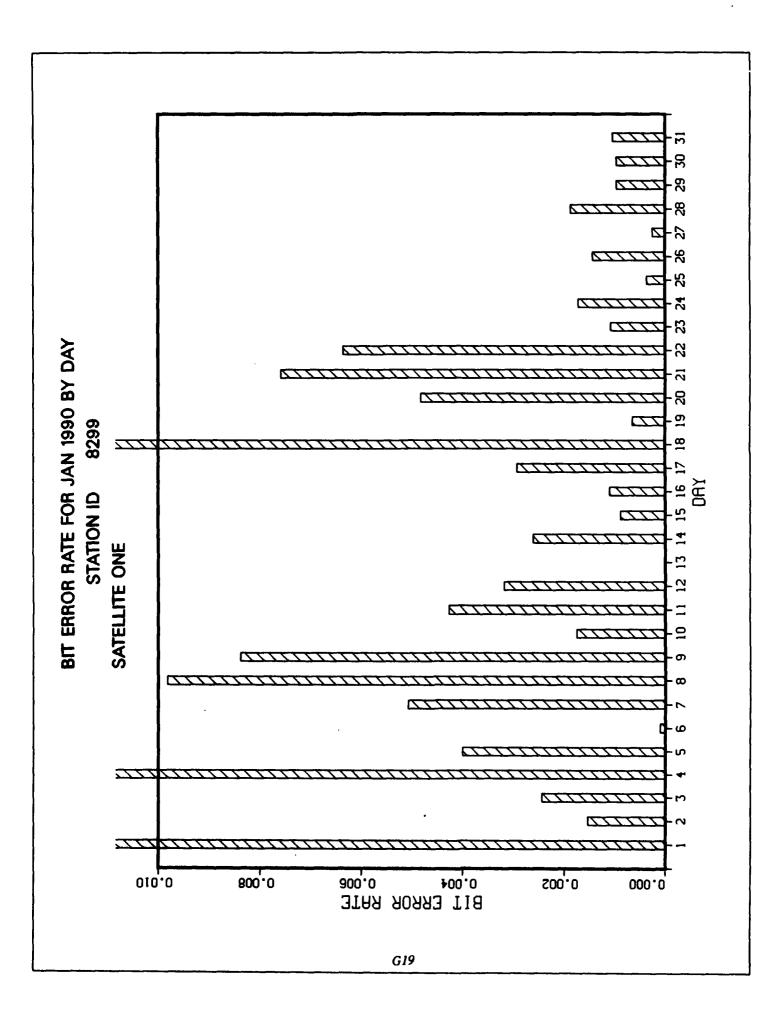


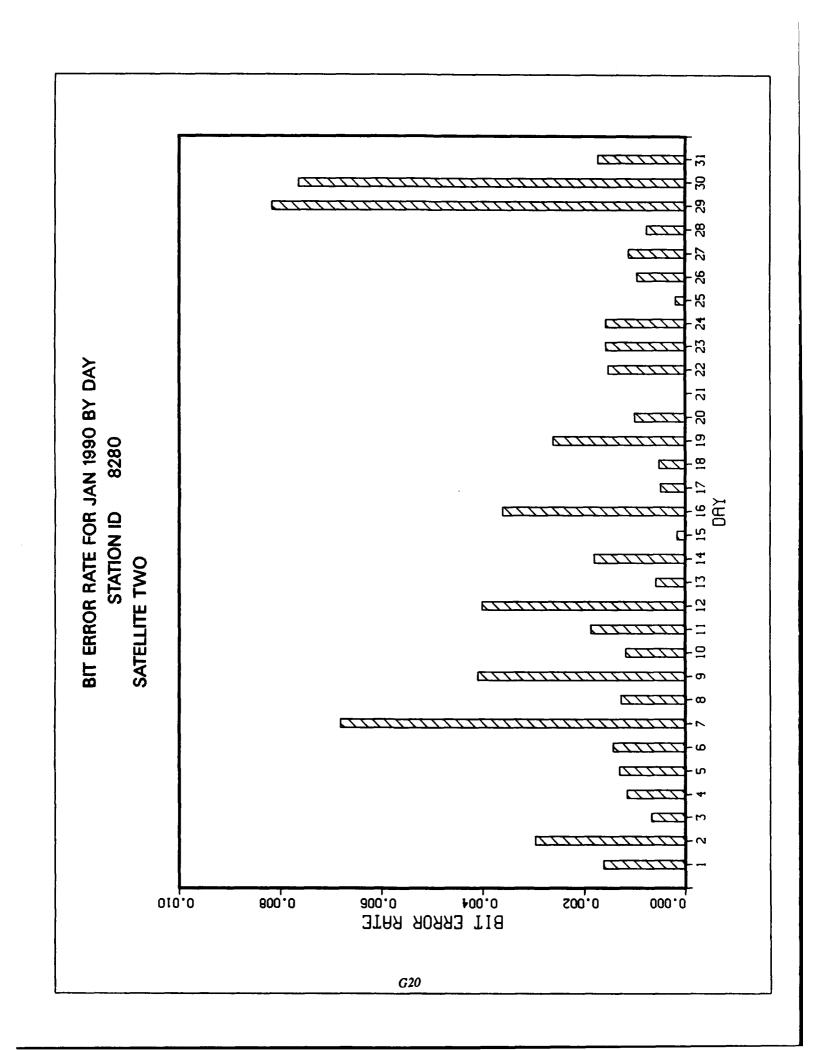


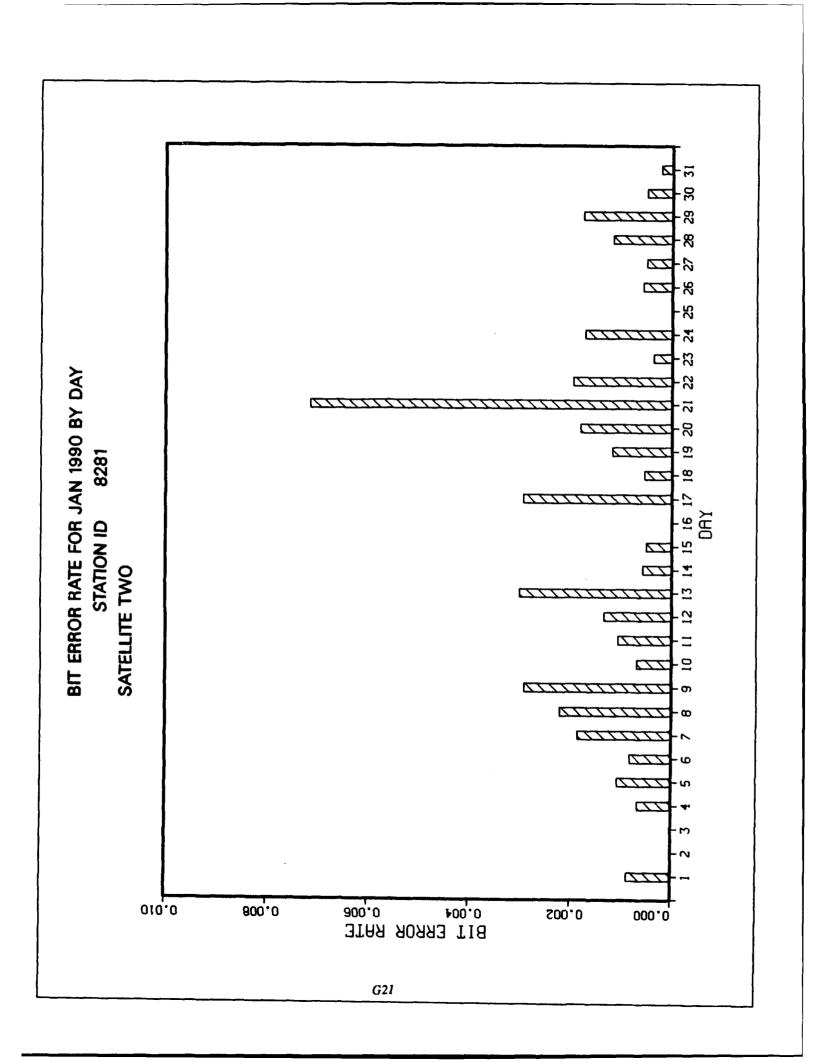


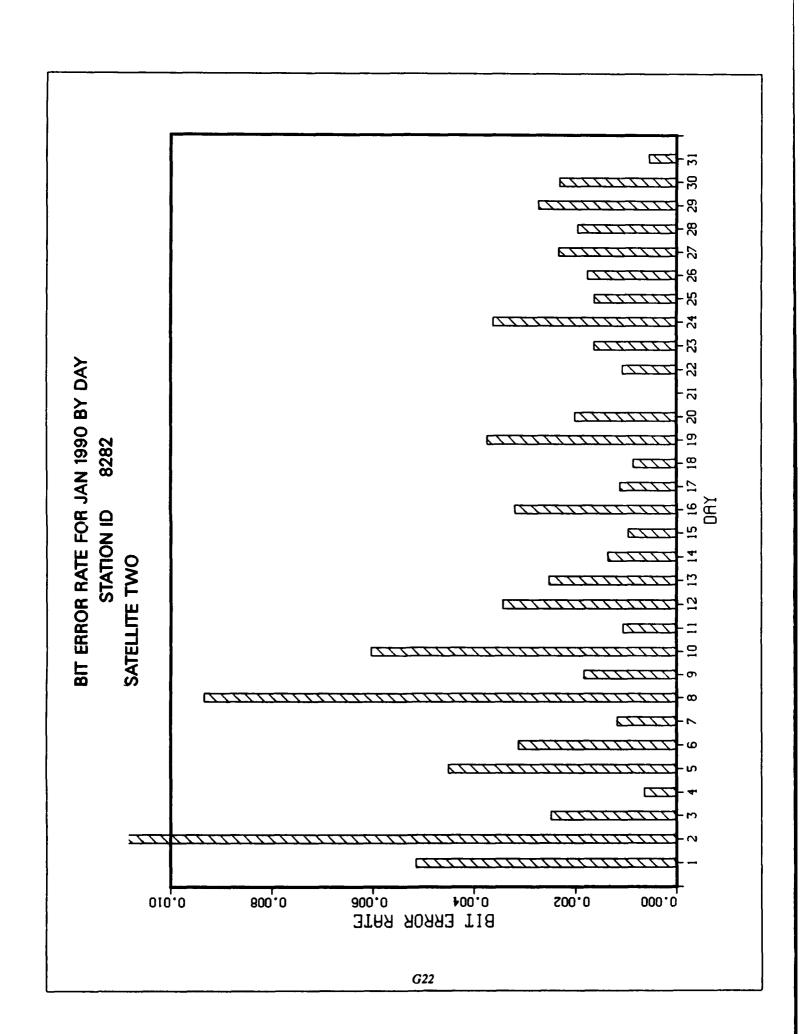


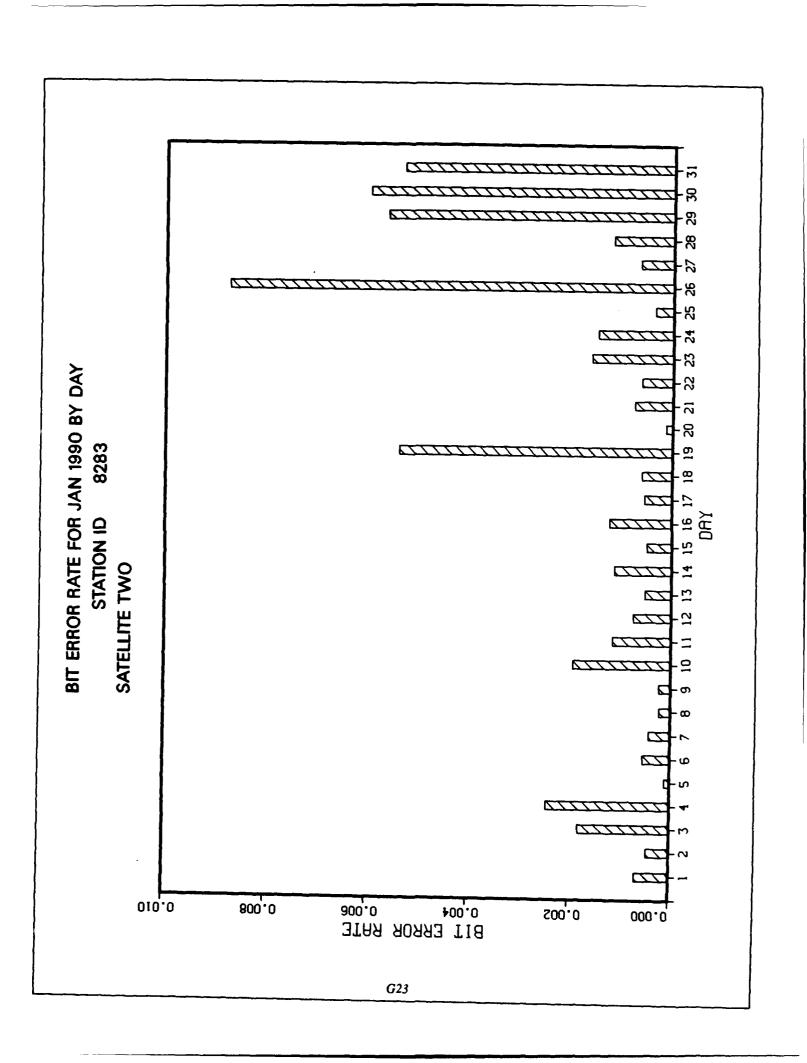


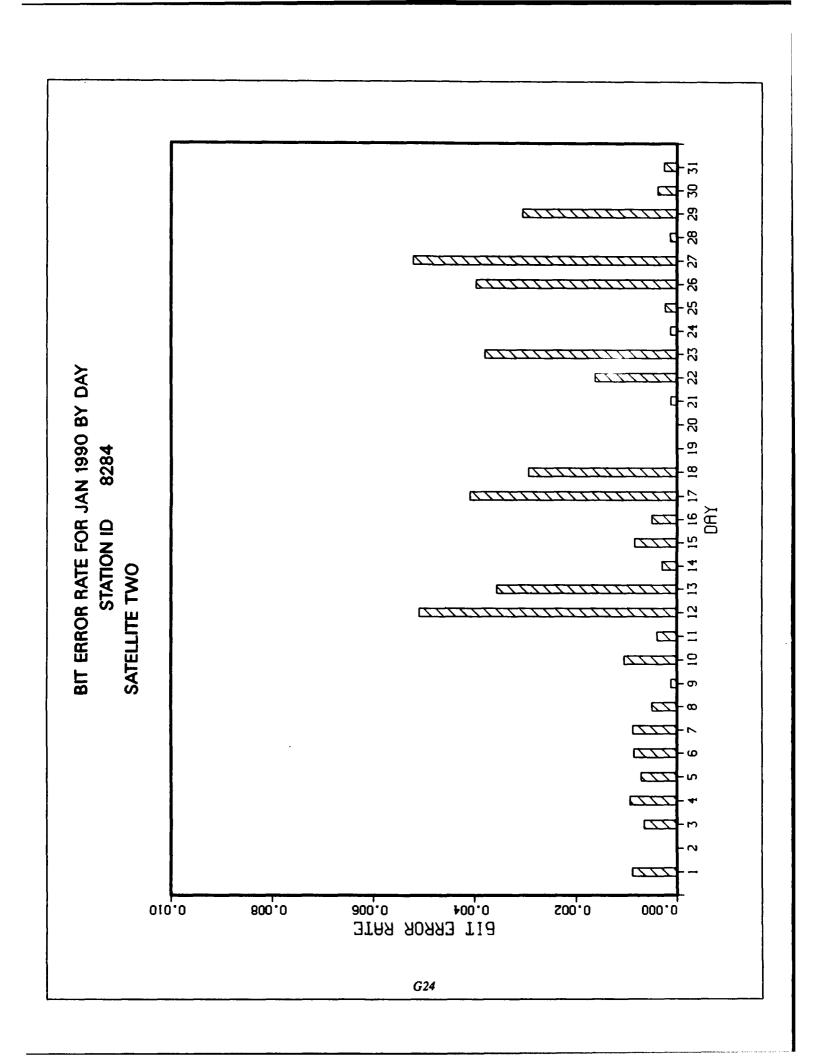


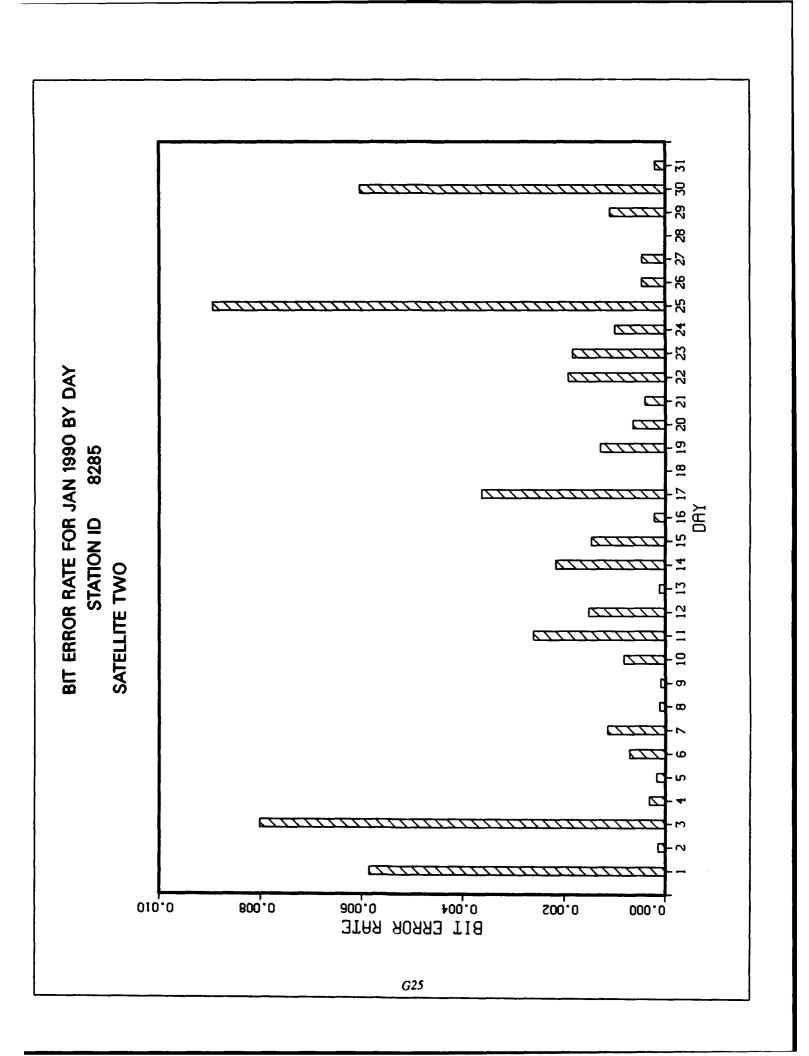


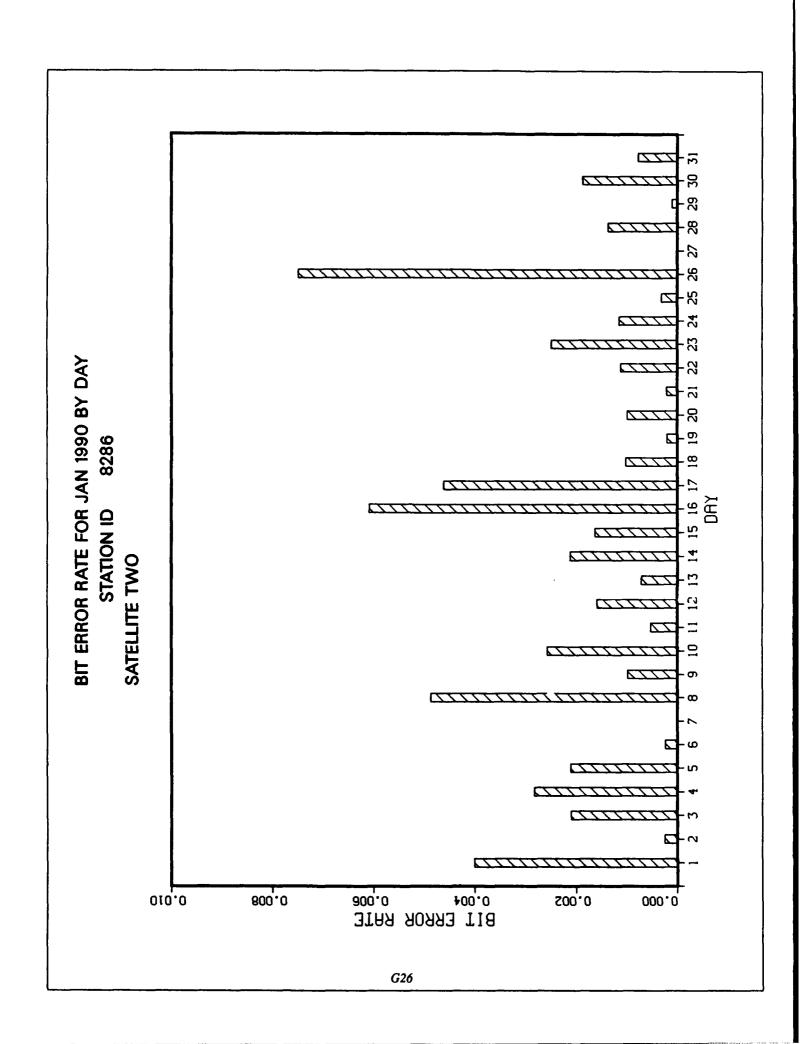


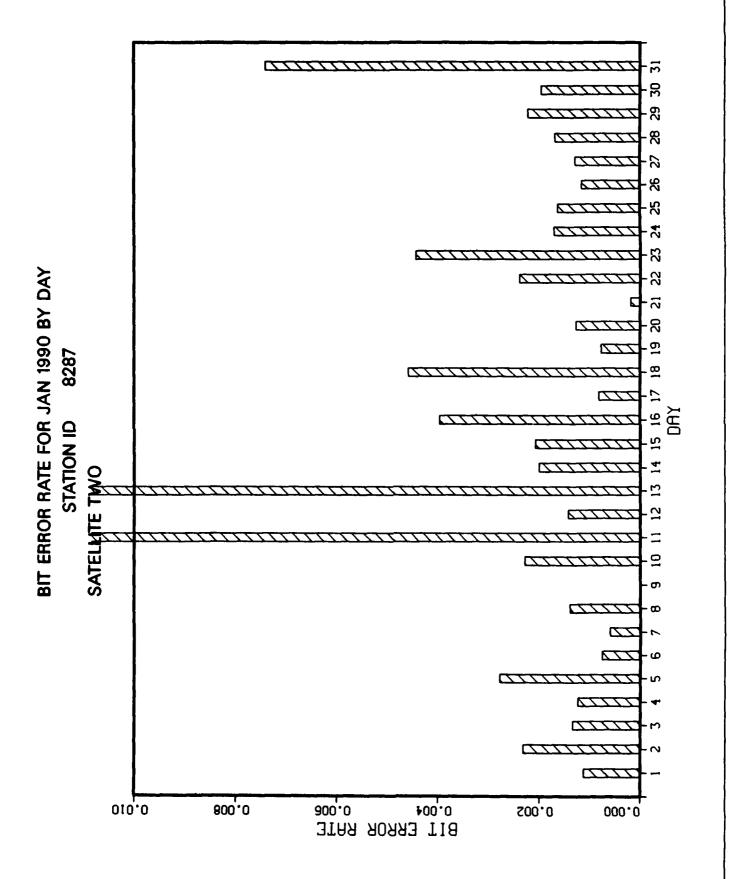


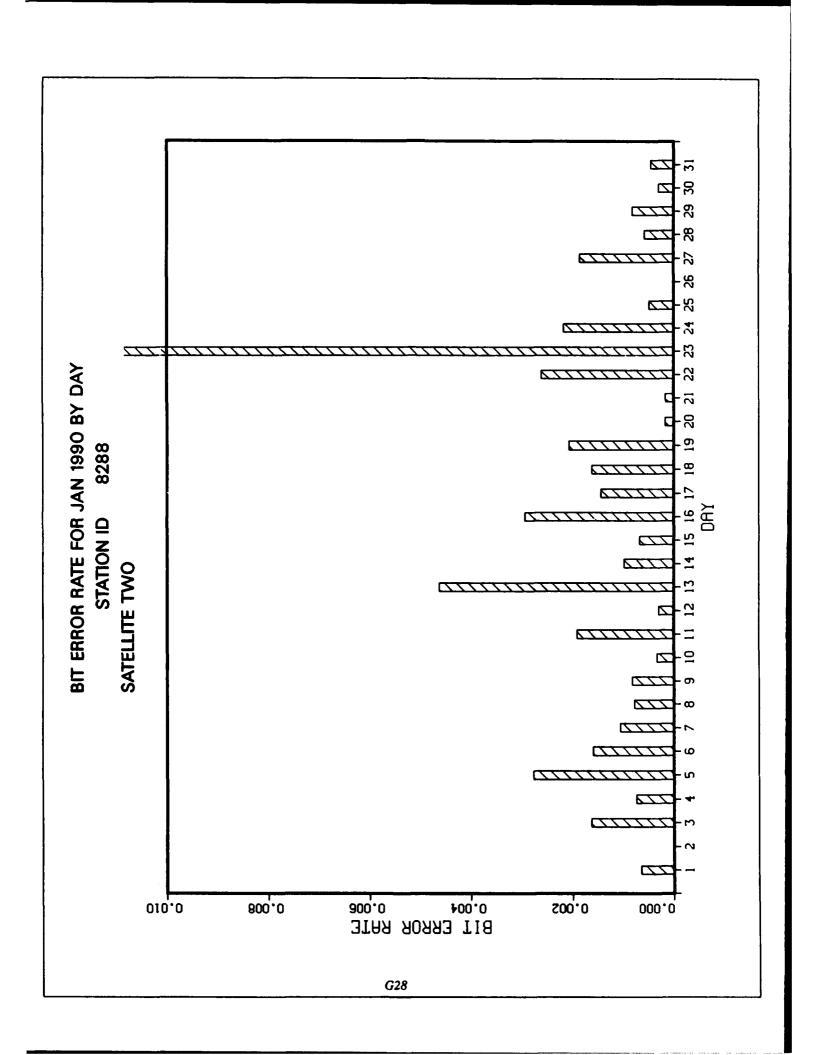


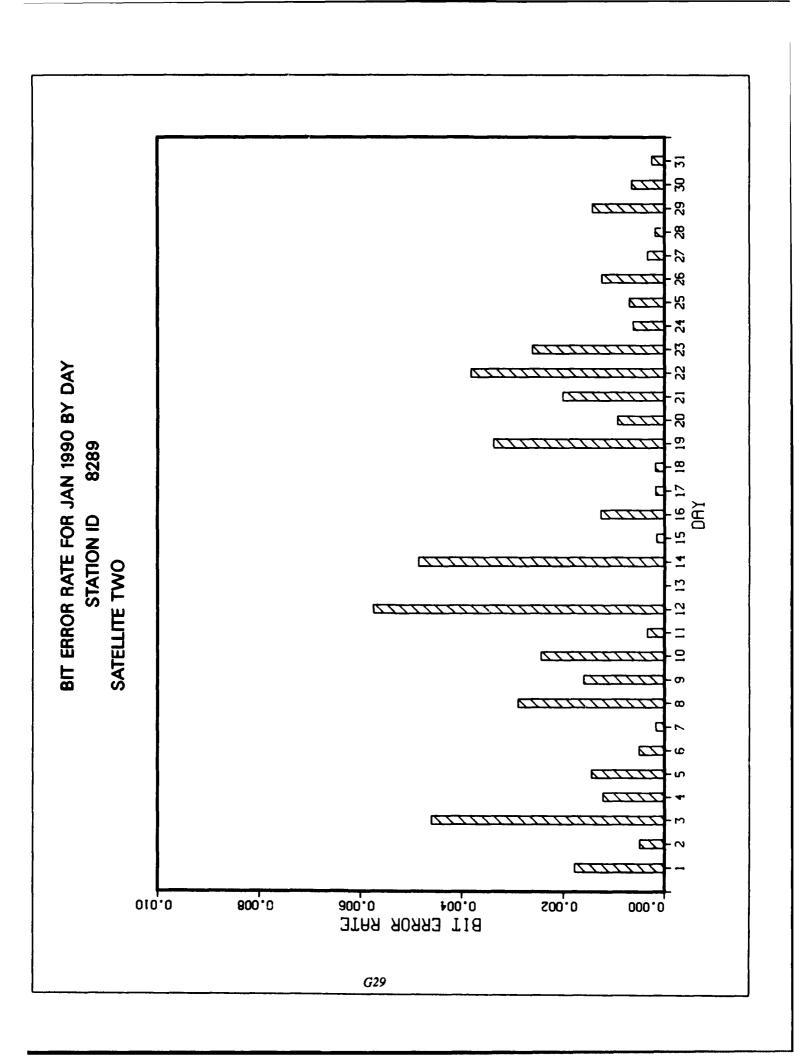


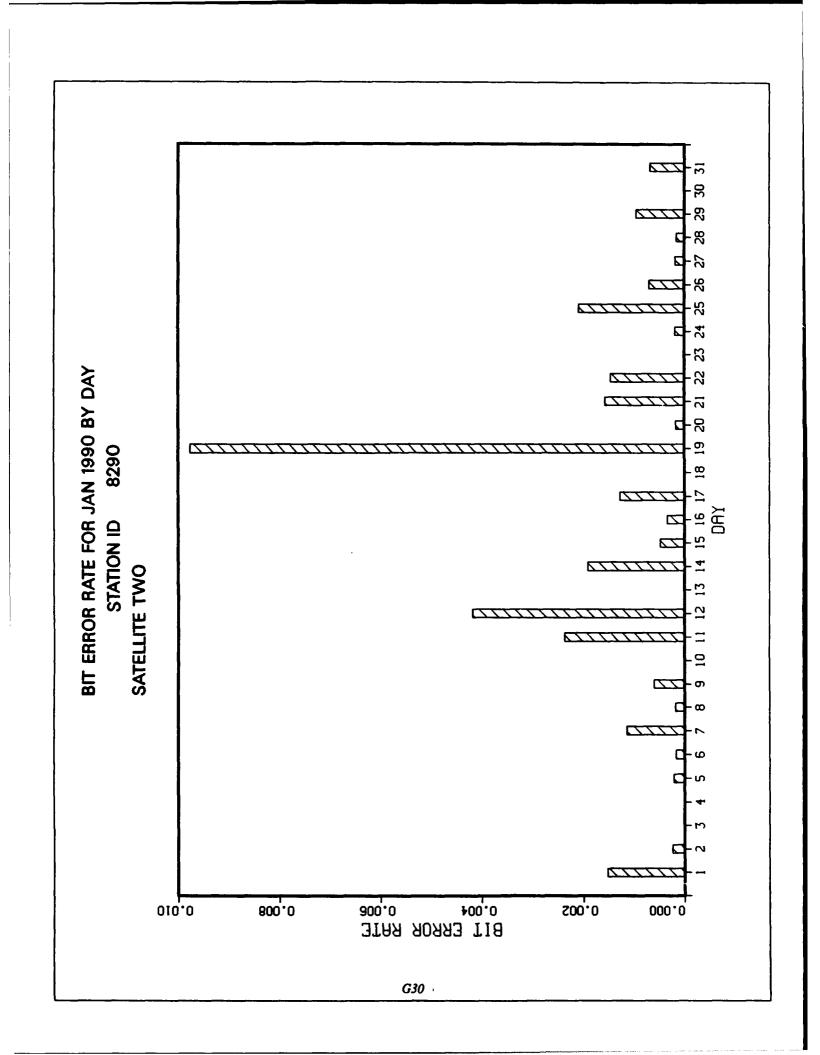


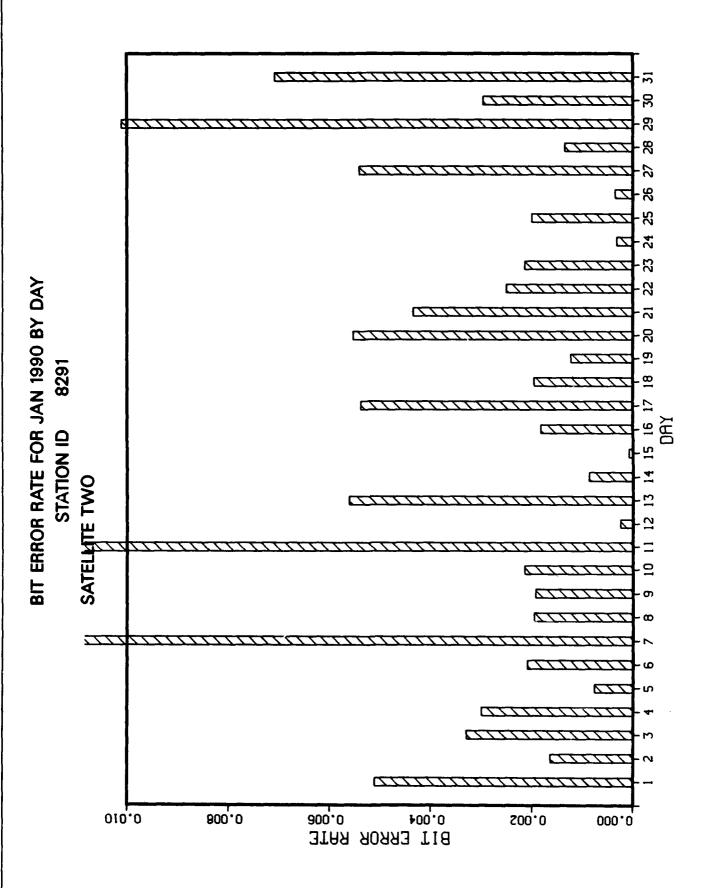


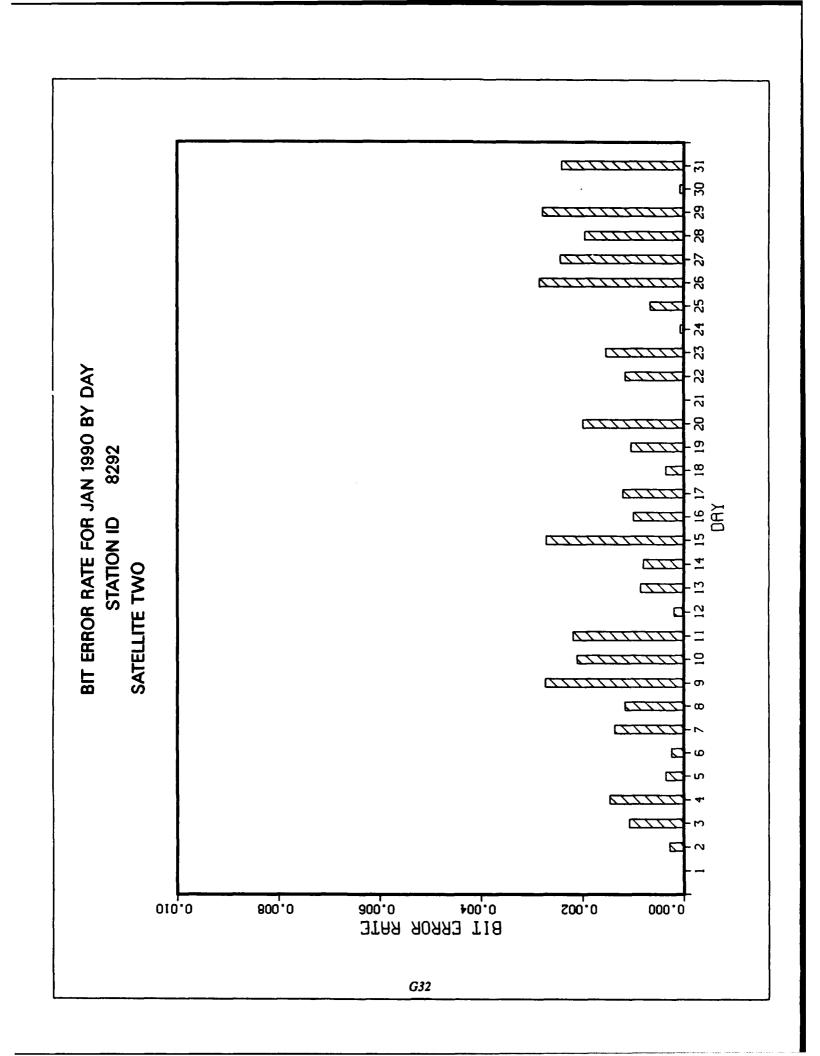


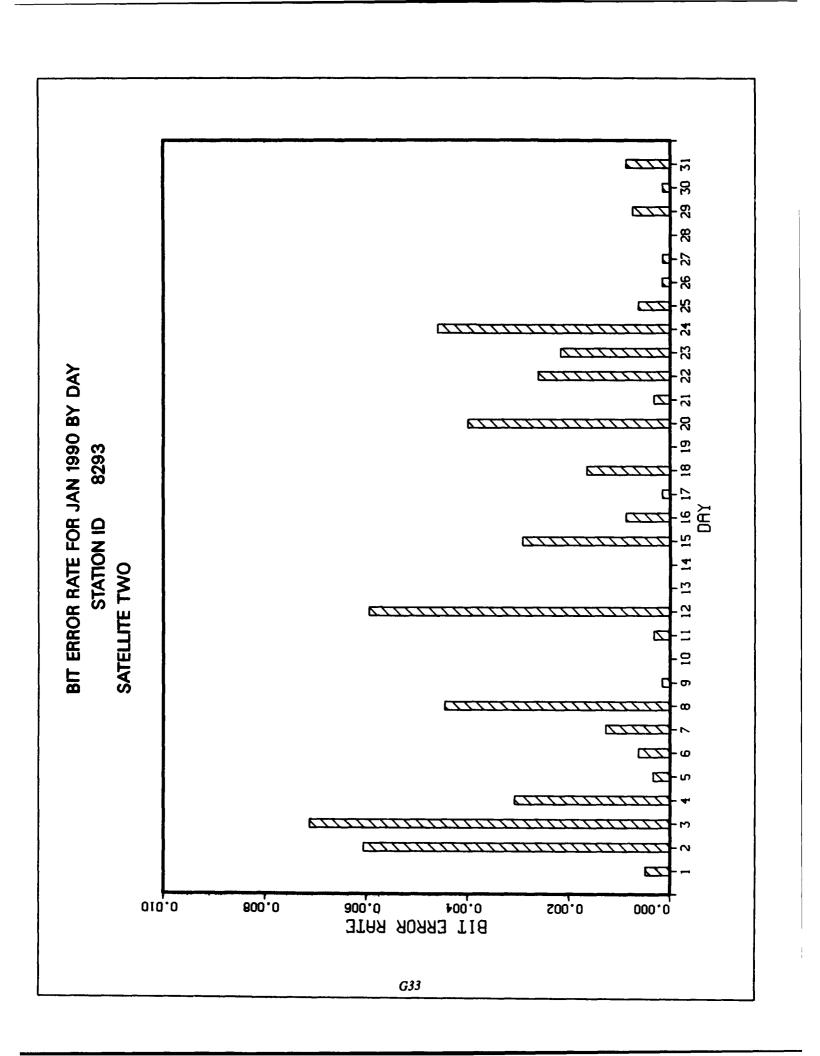


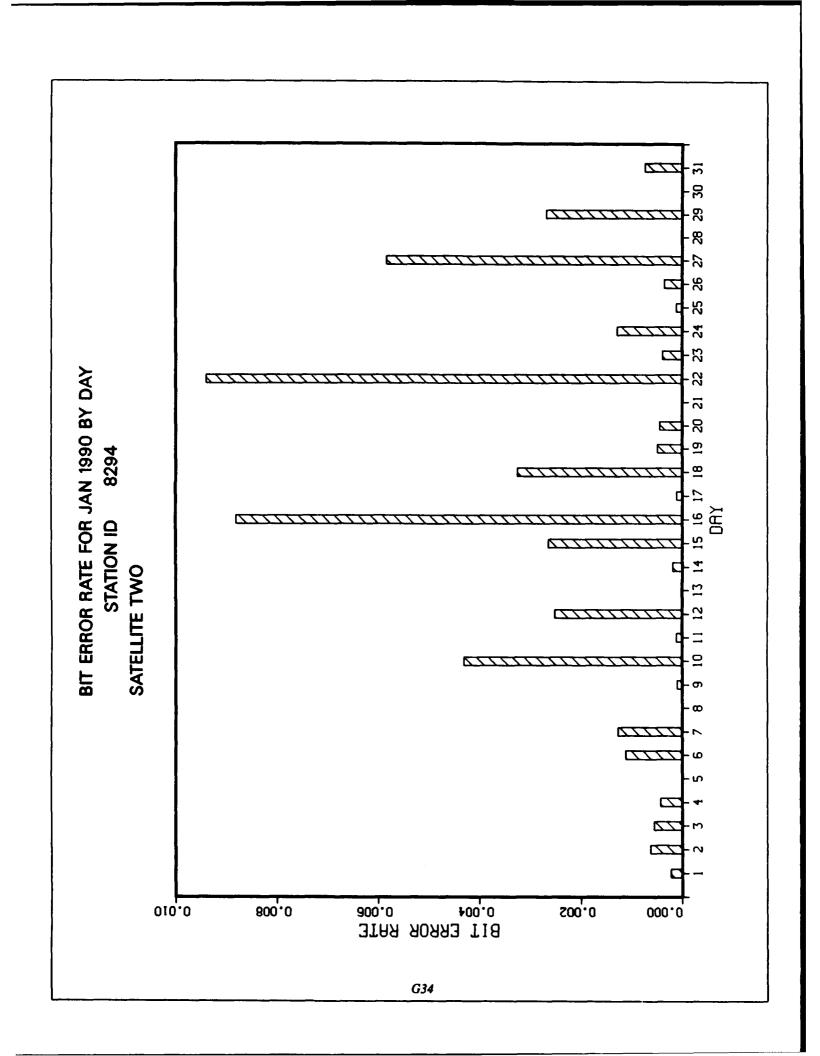


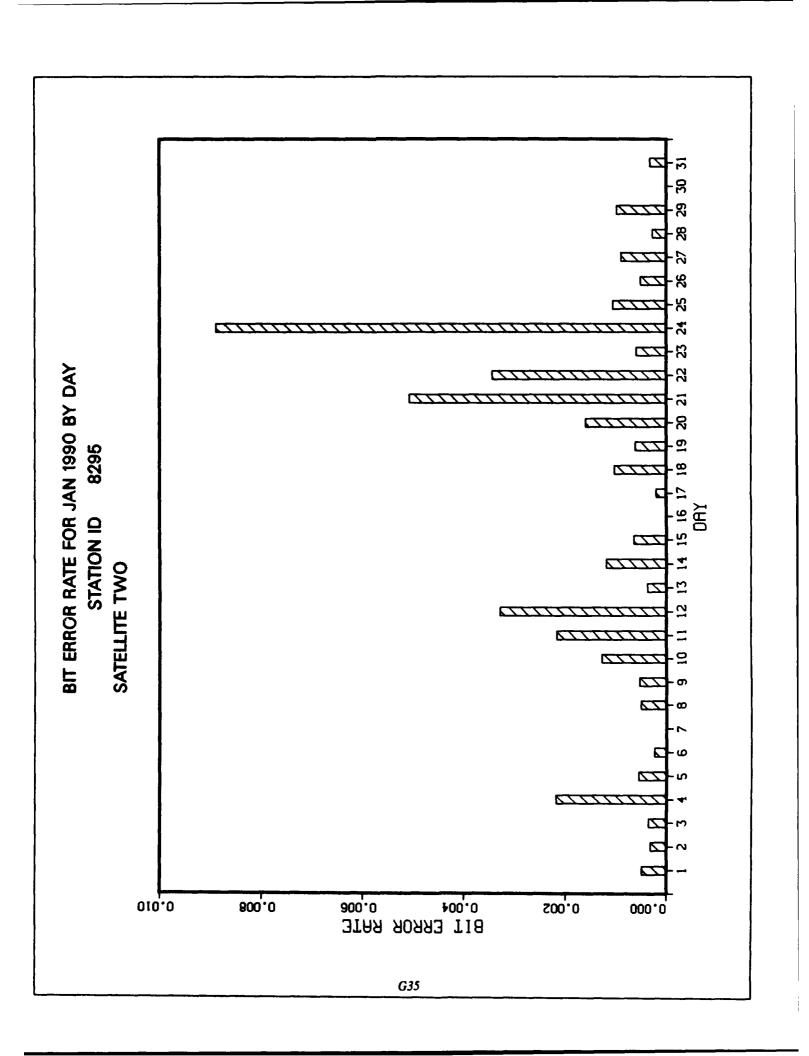


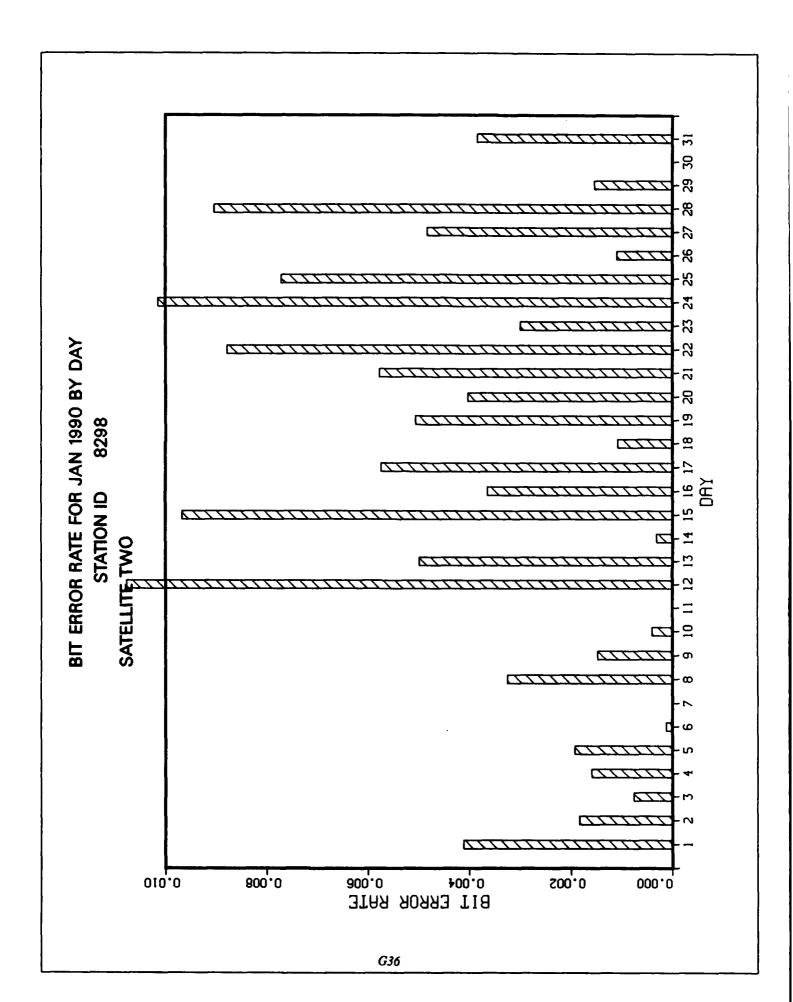


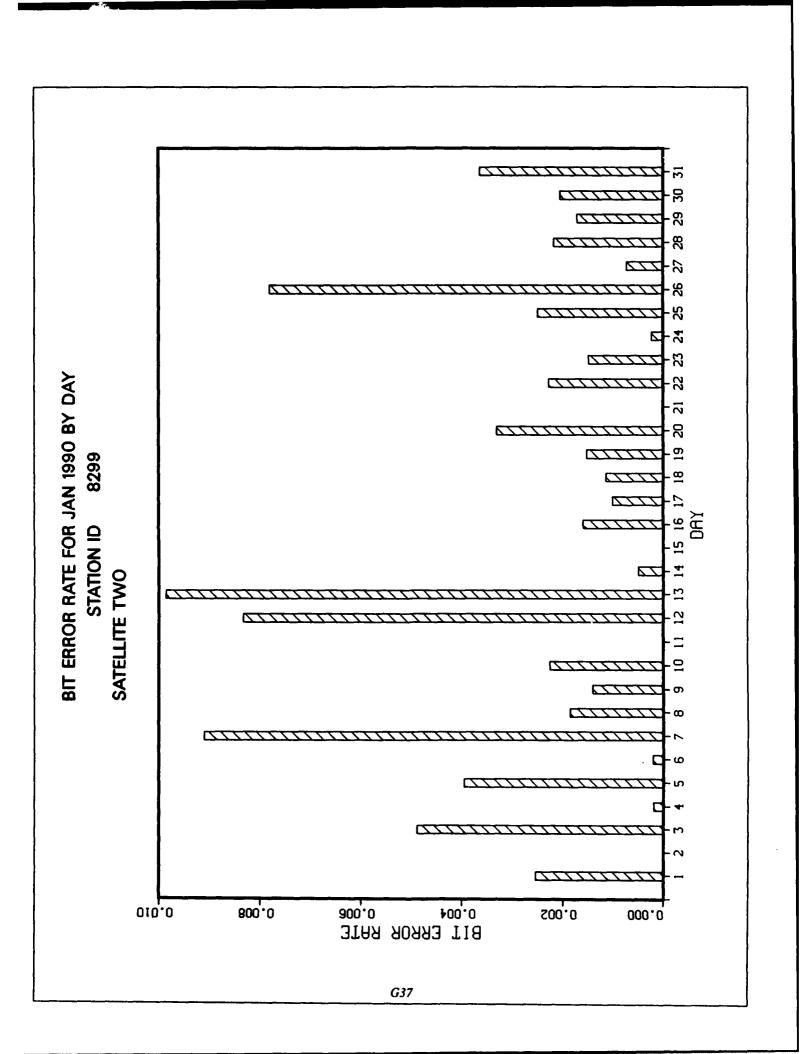


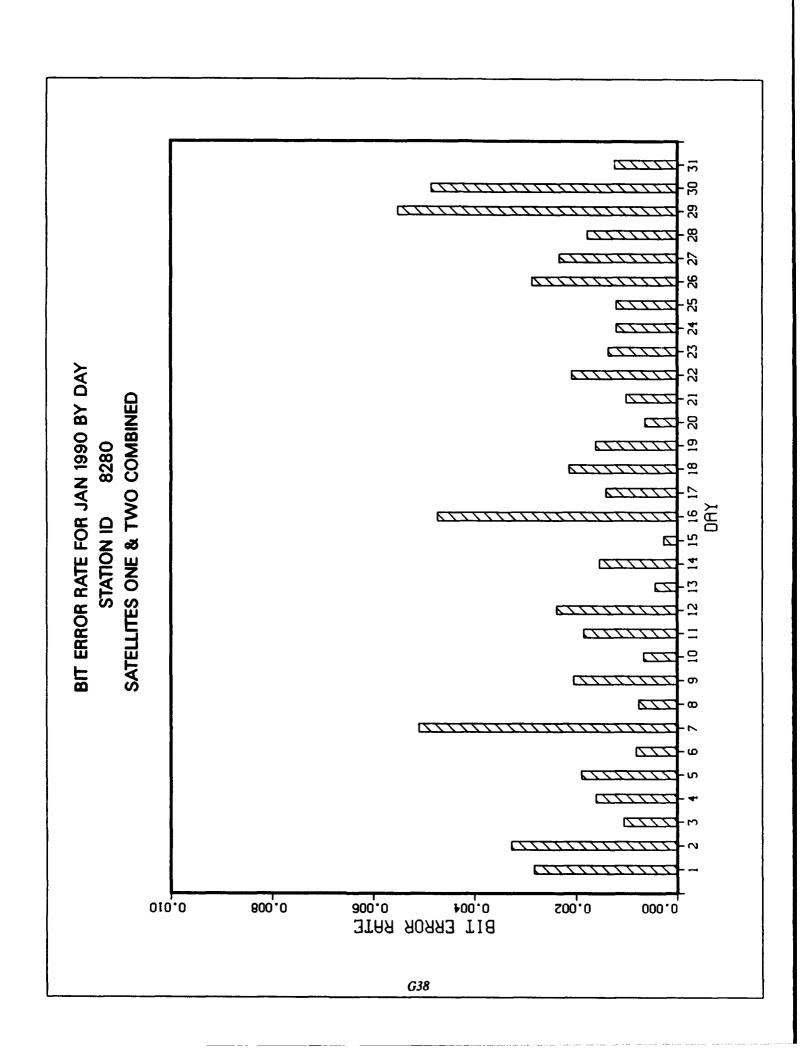


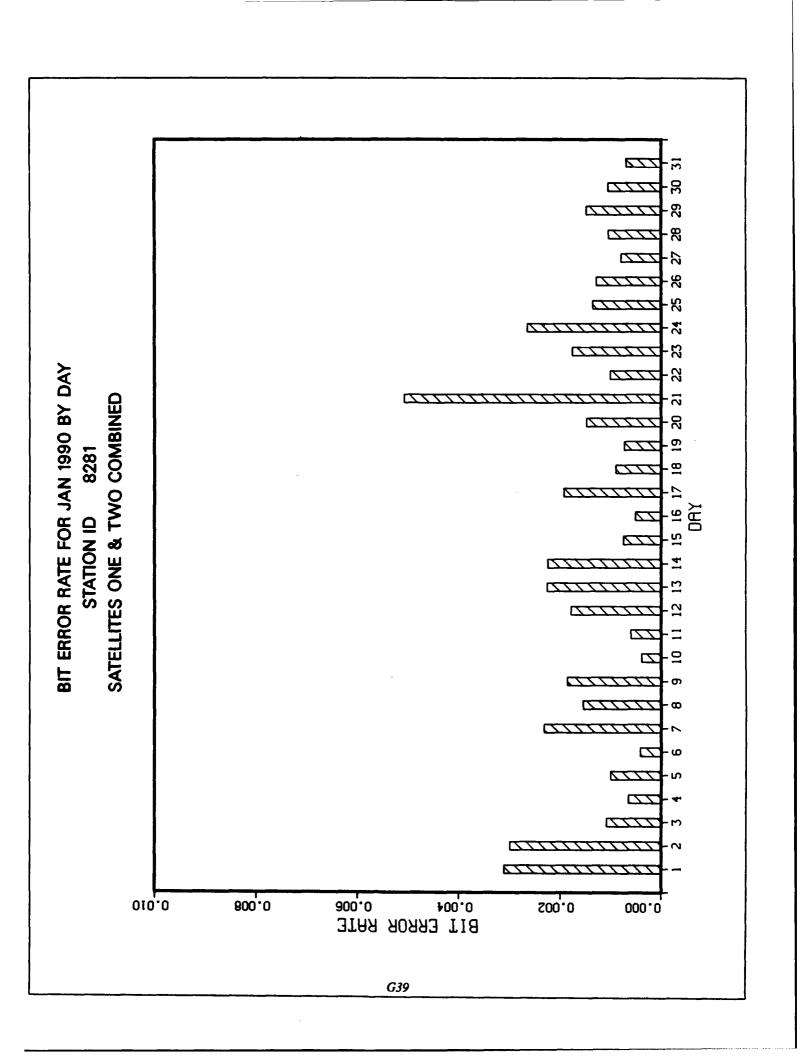


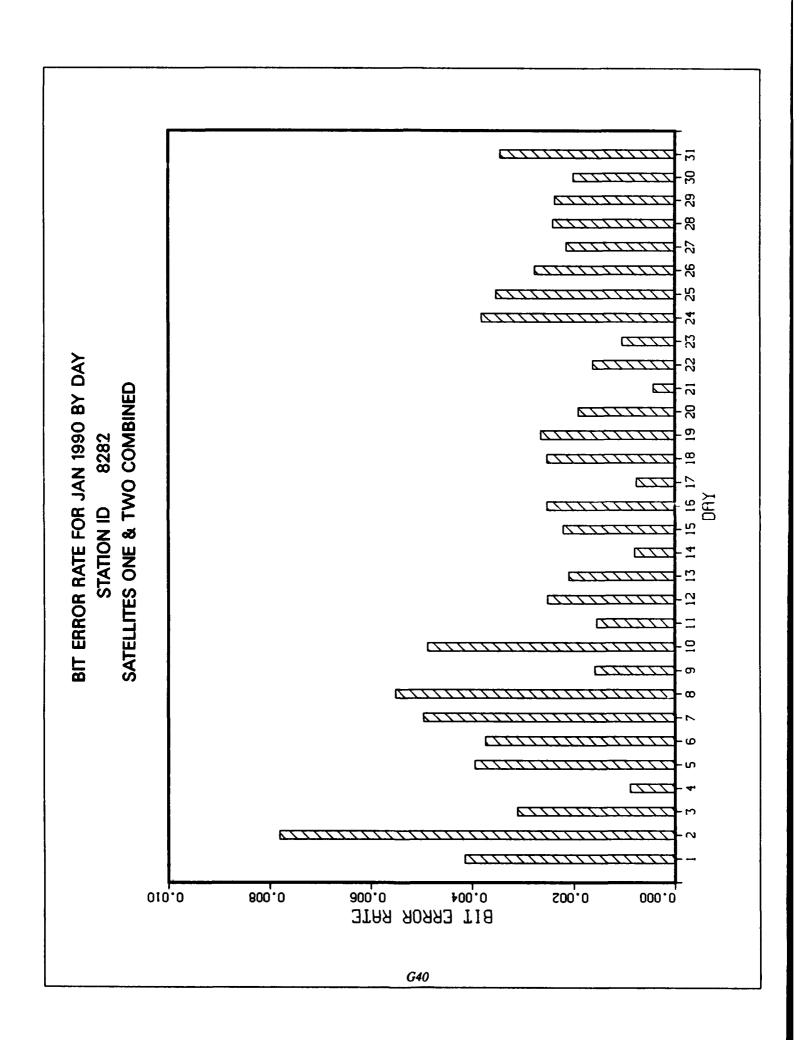


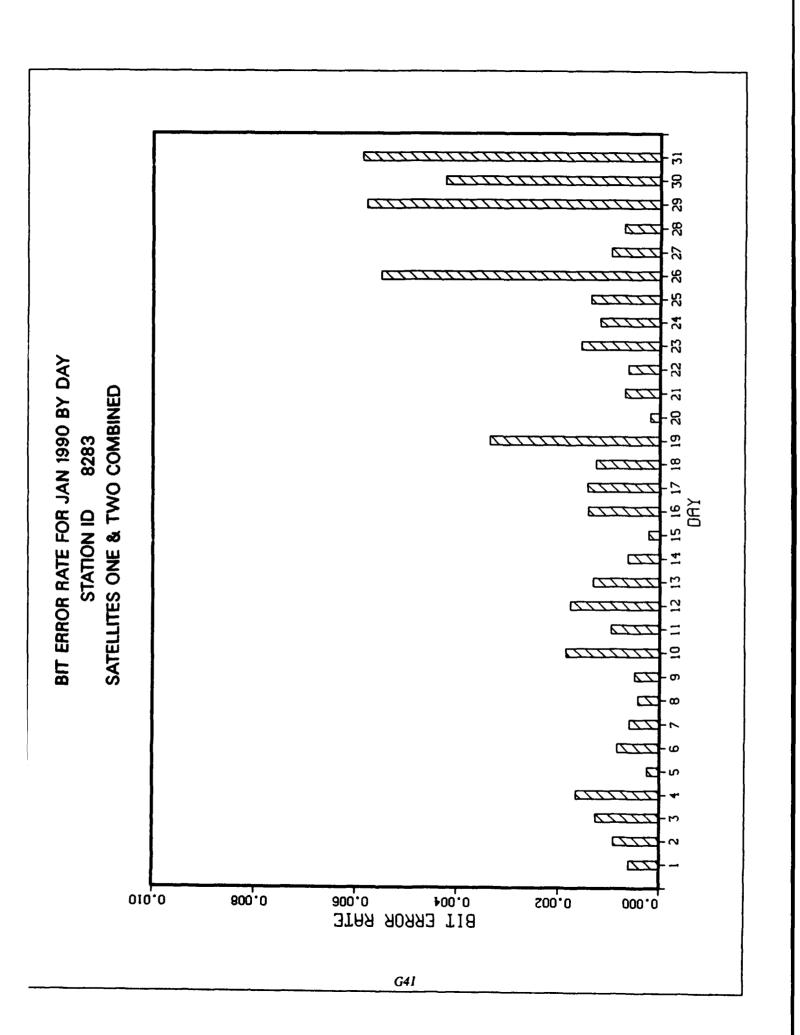


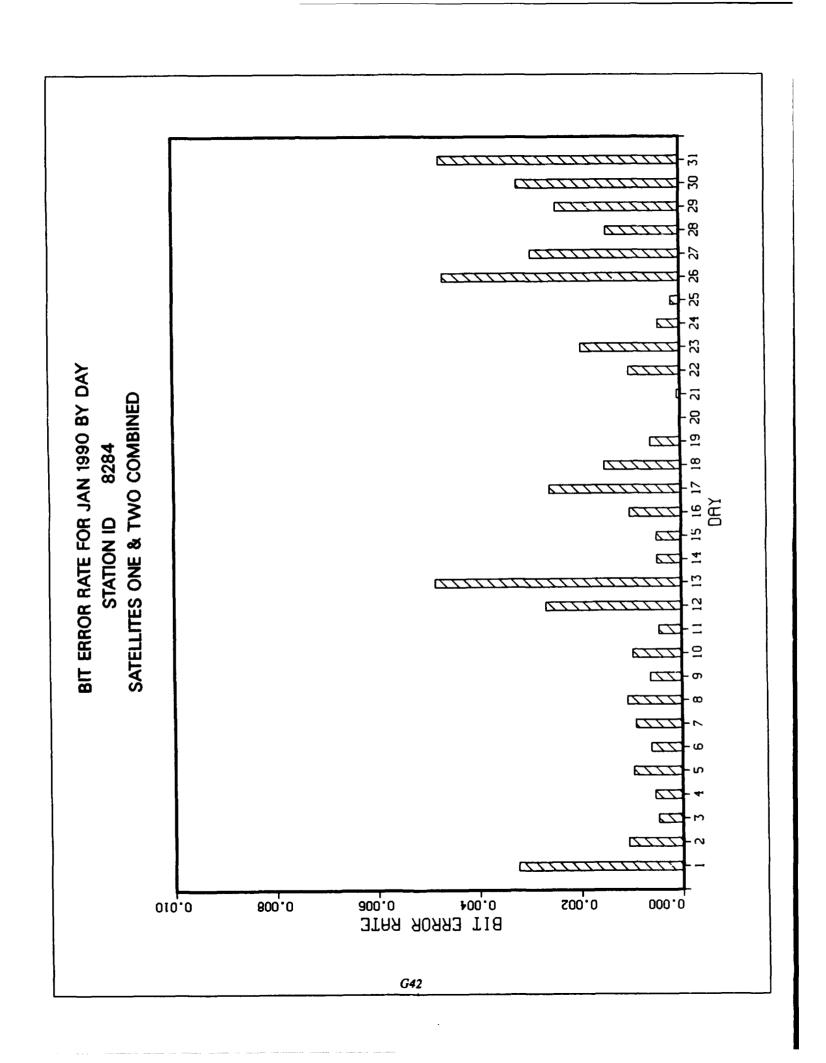


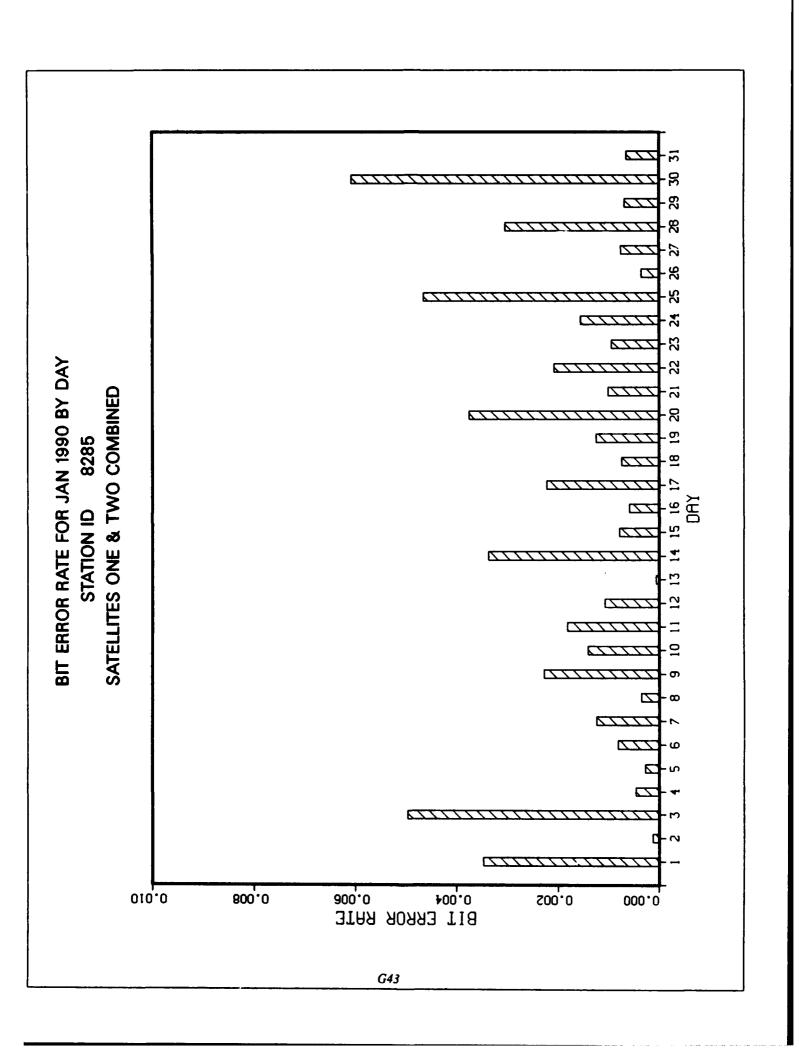


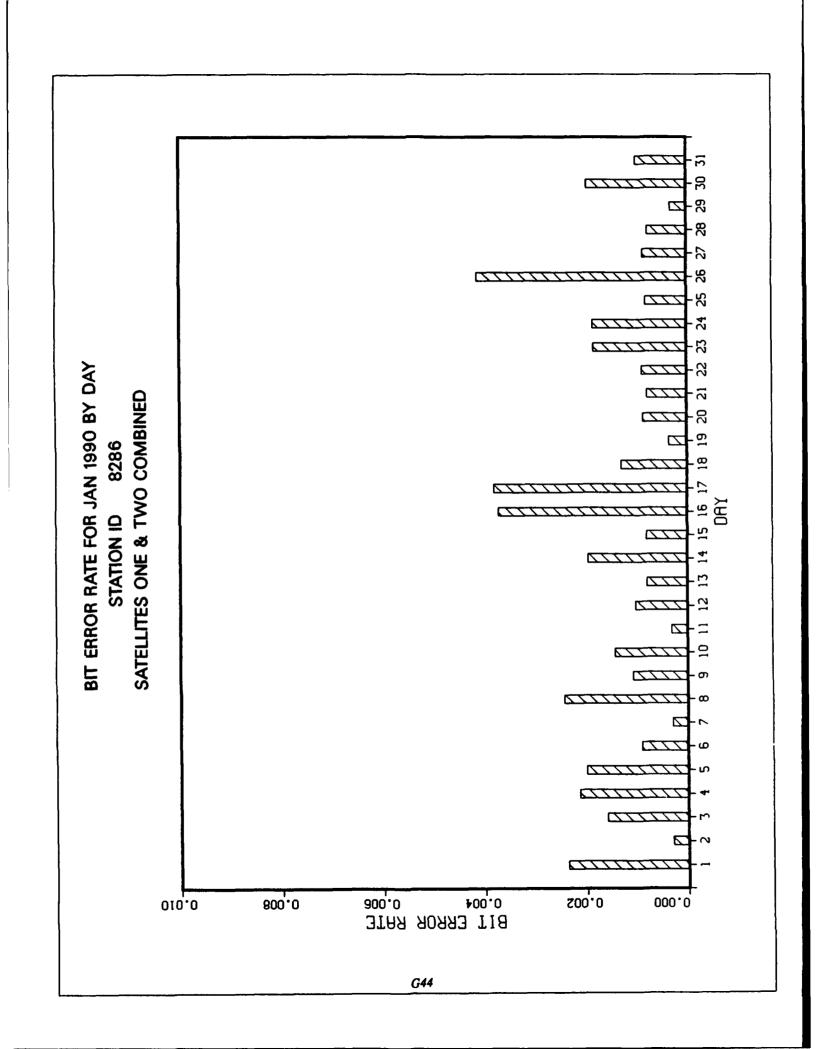


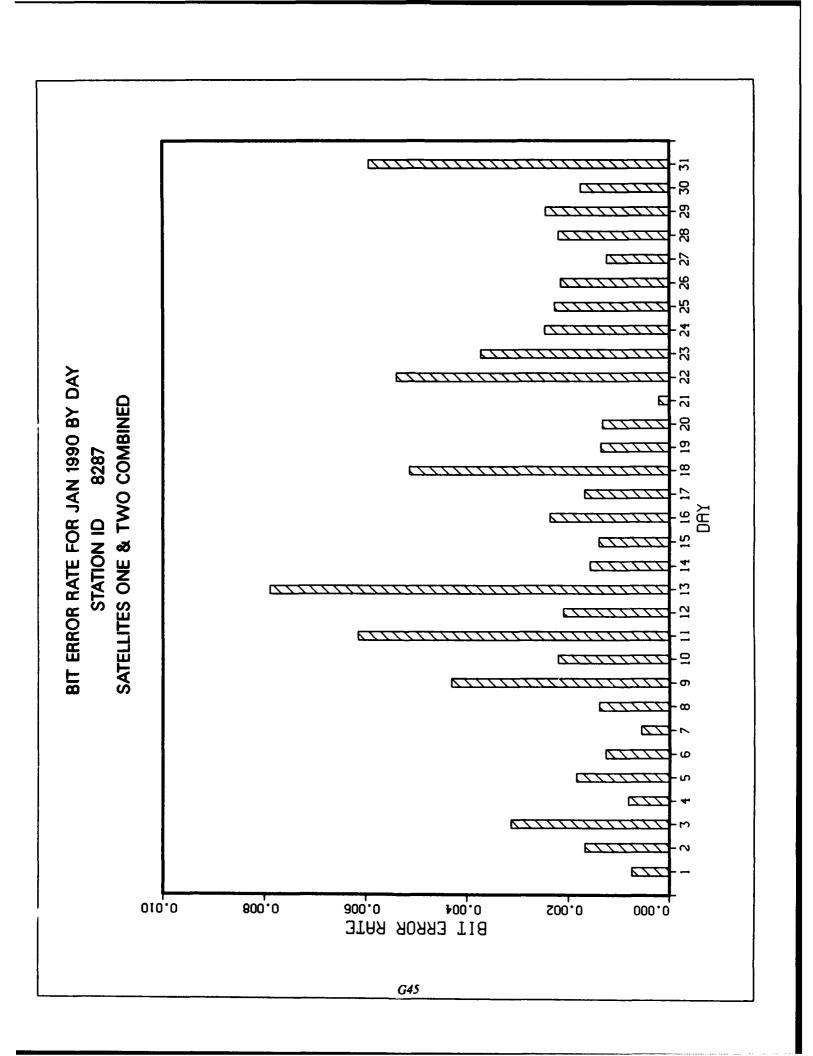


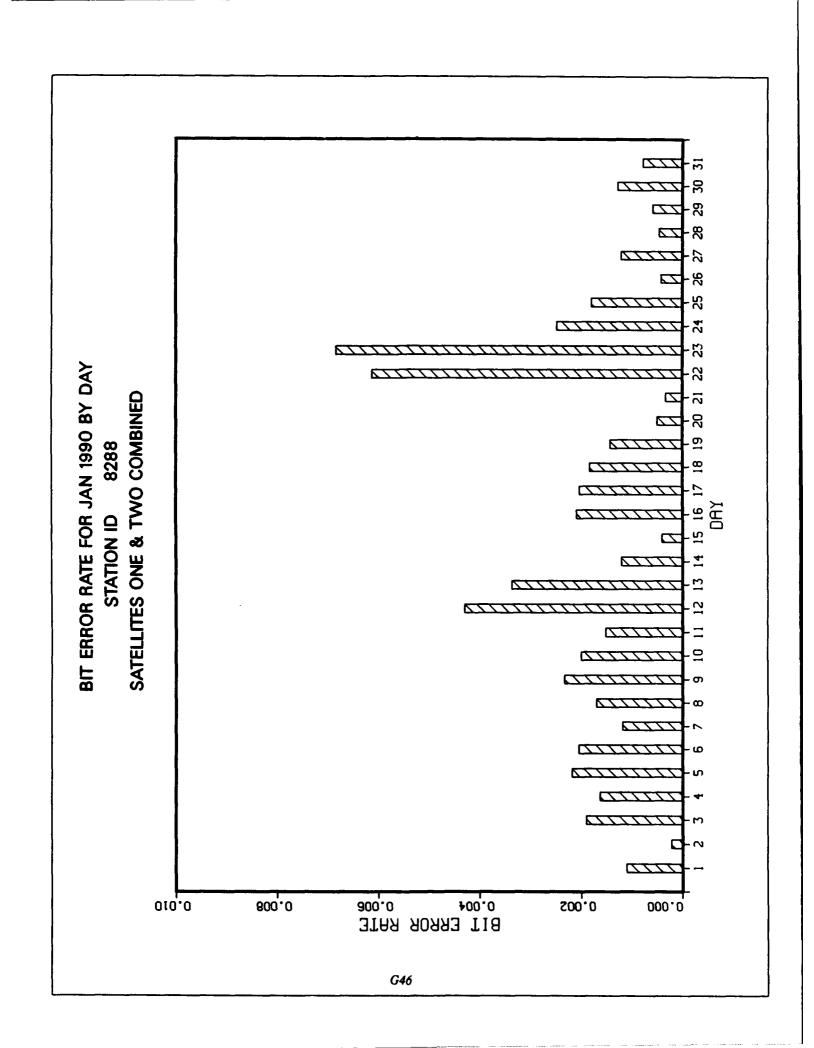


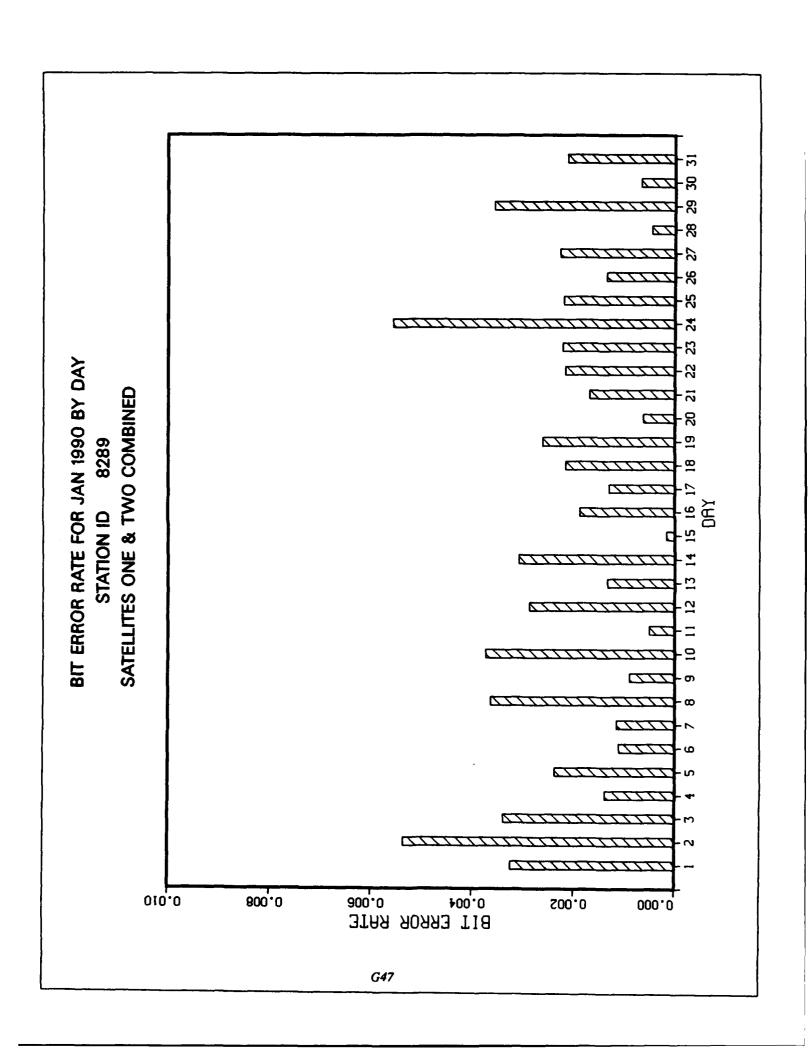


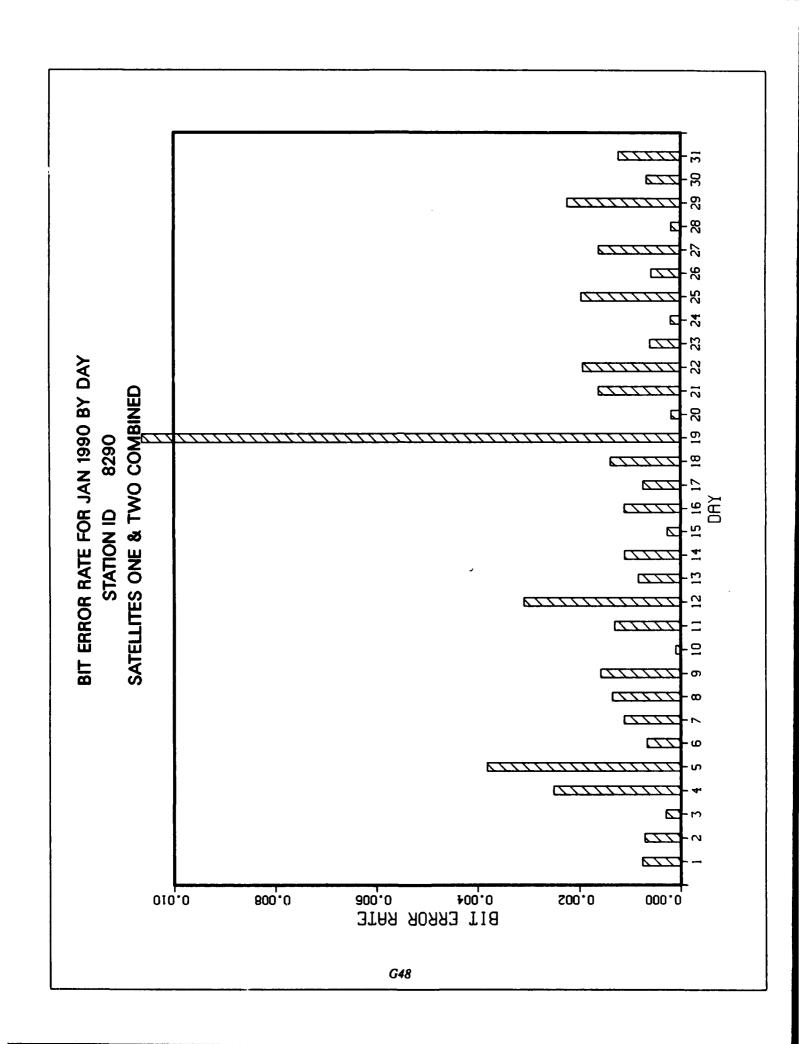


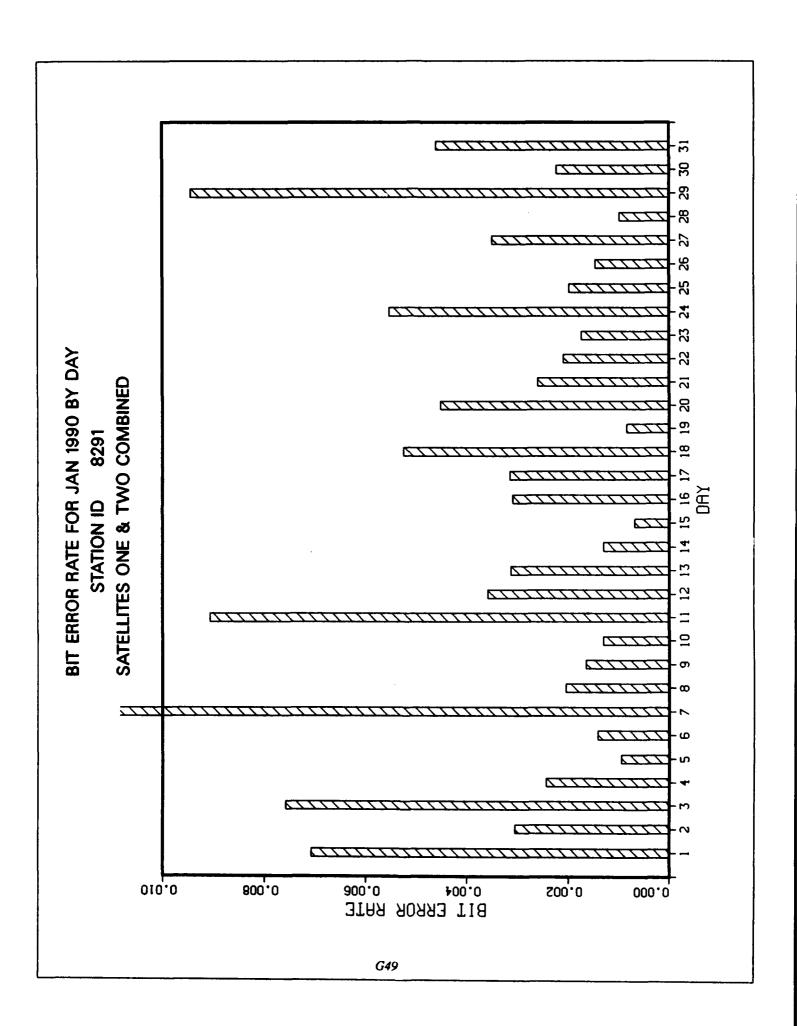


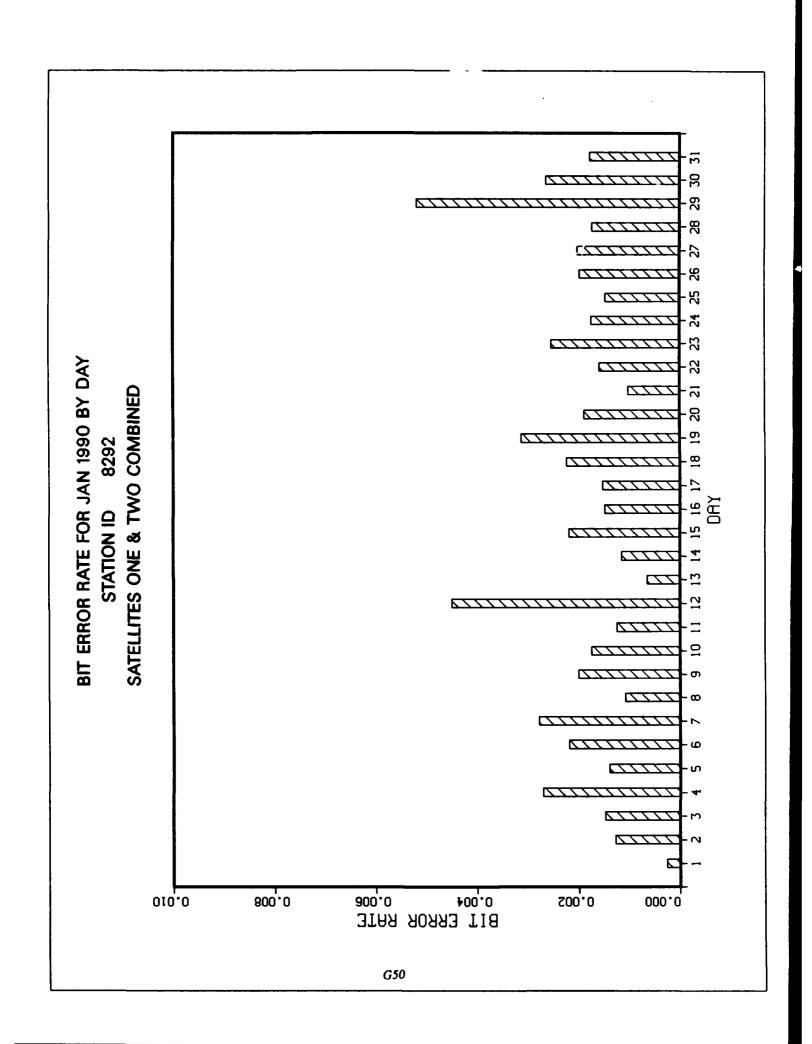


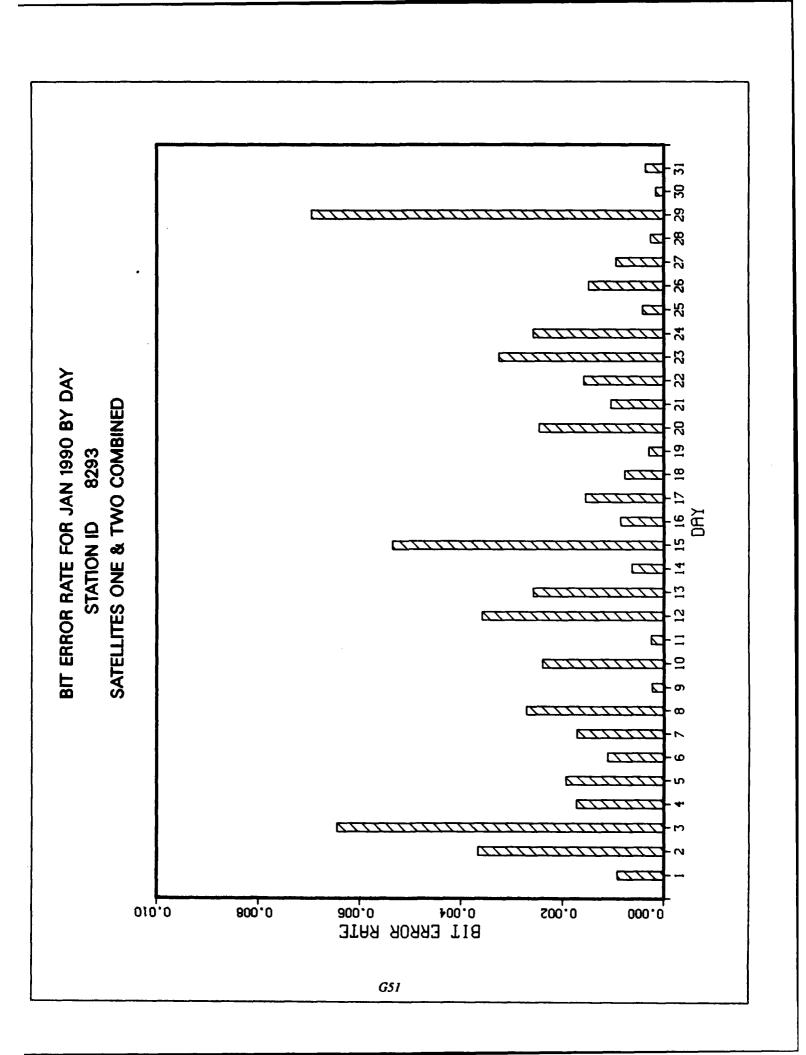


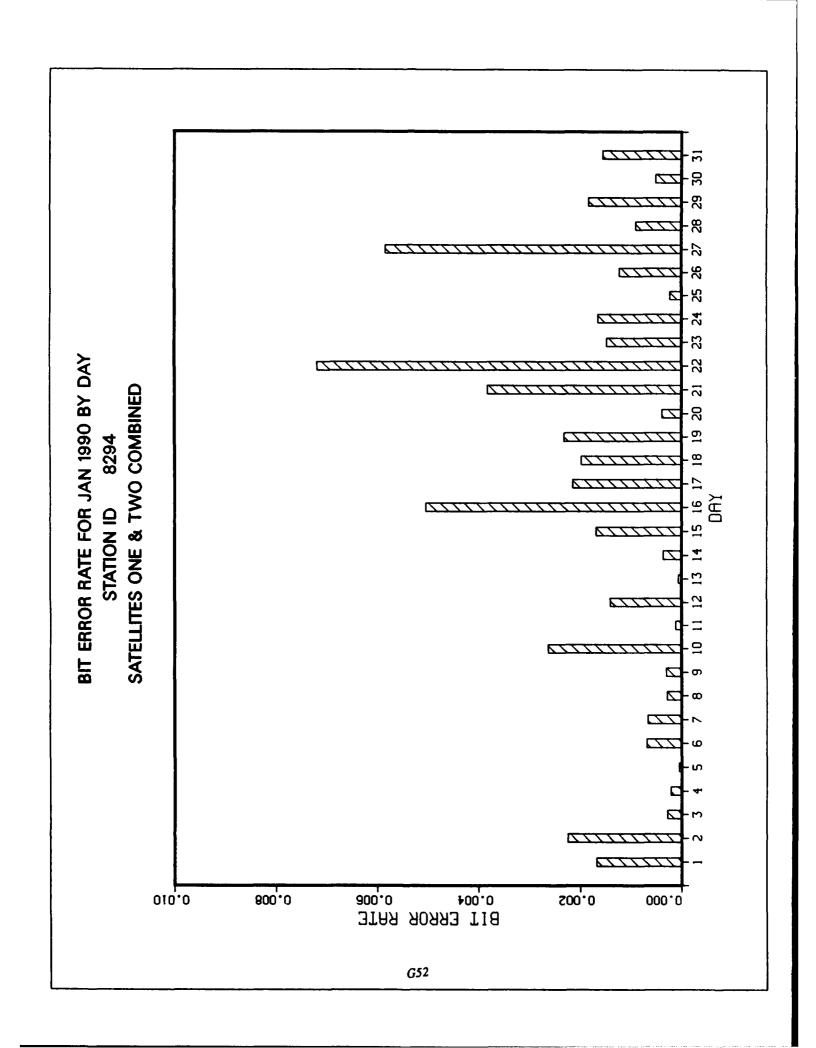


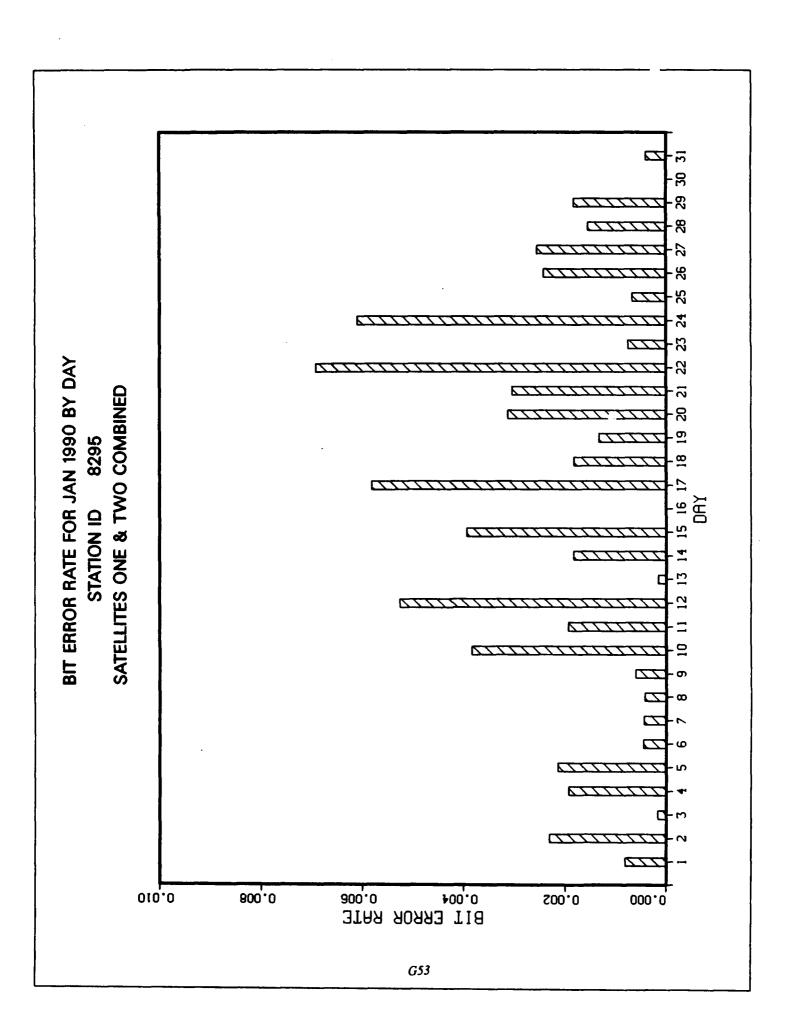


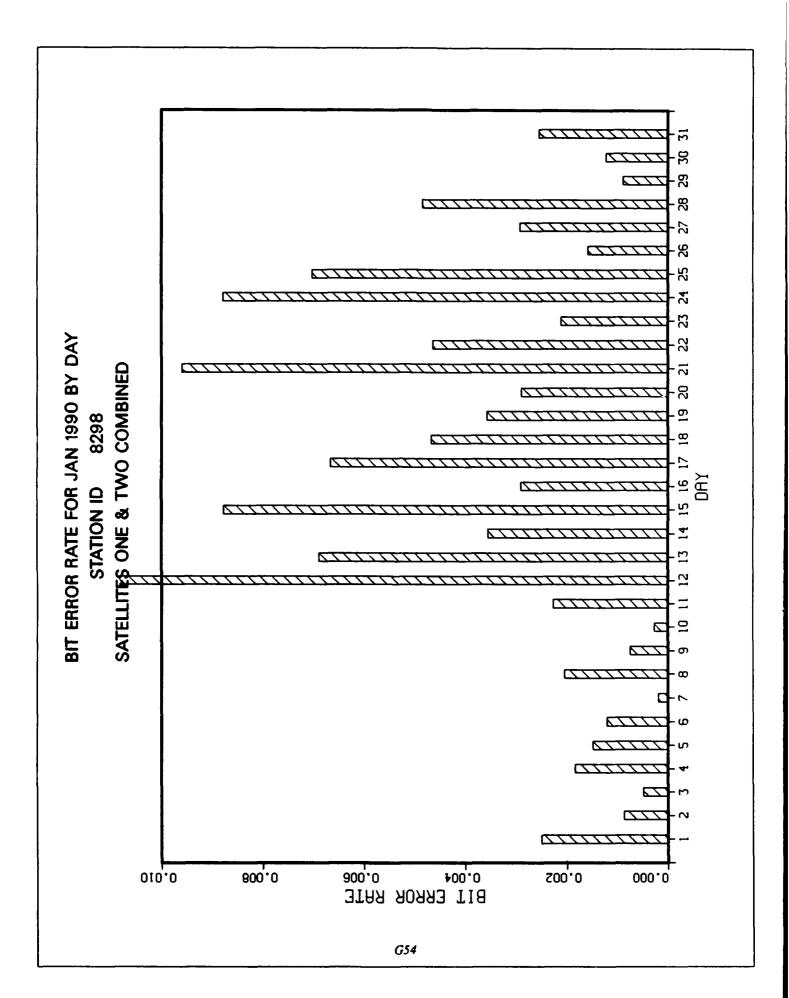


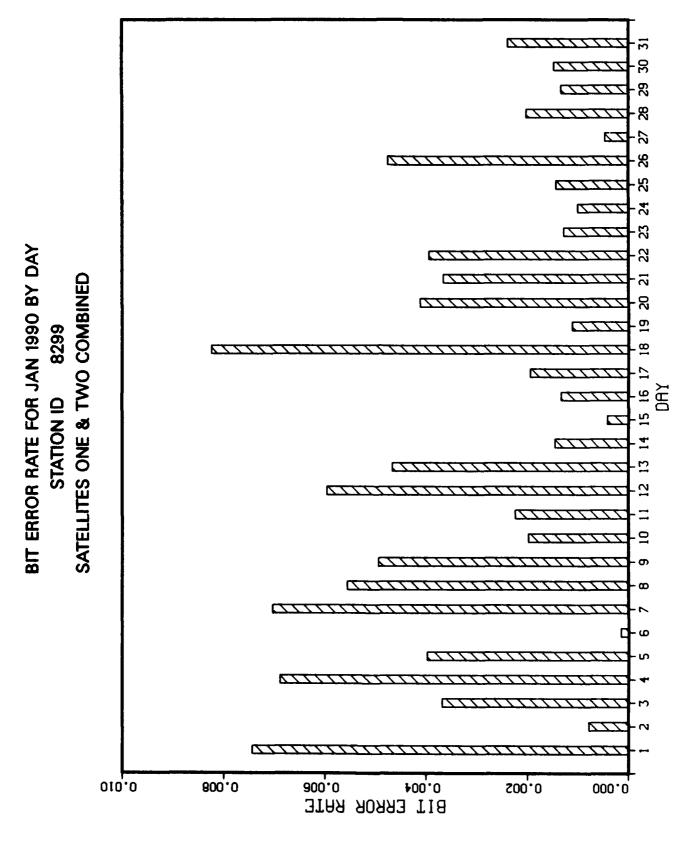






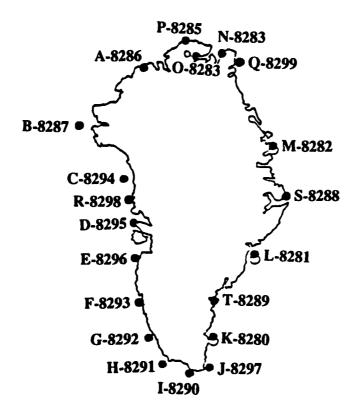




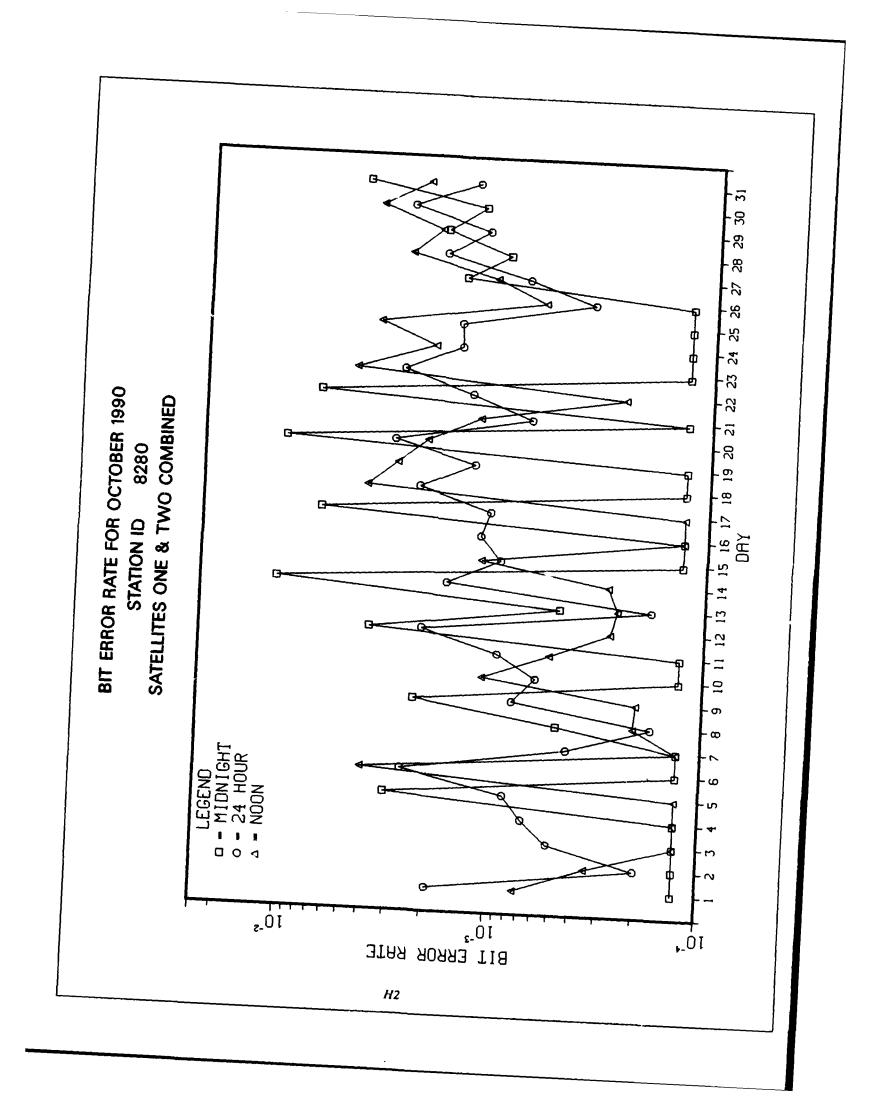


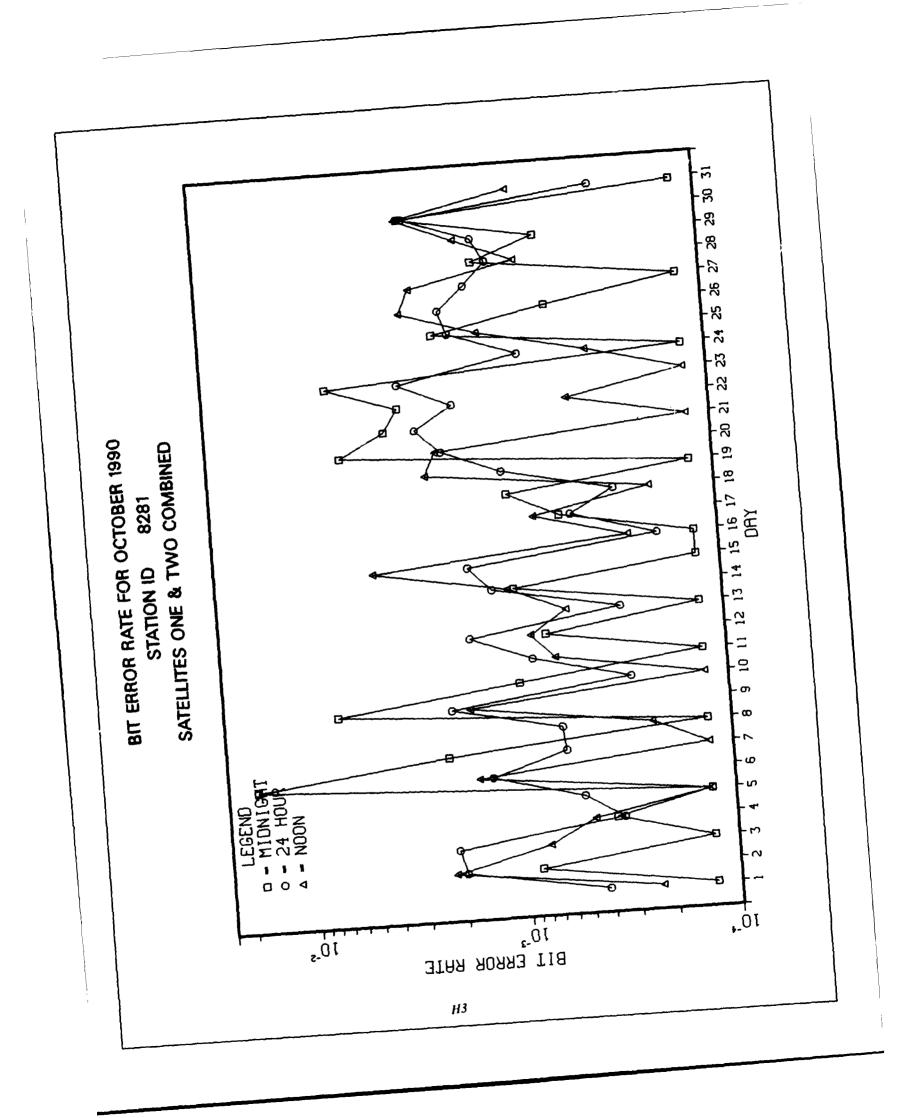
APPENDIX H

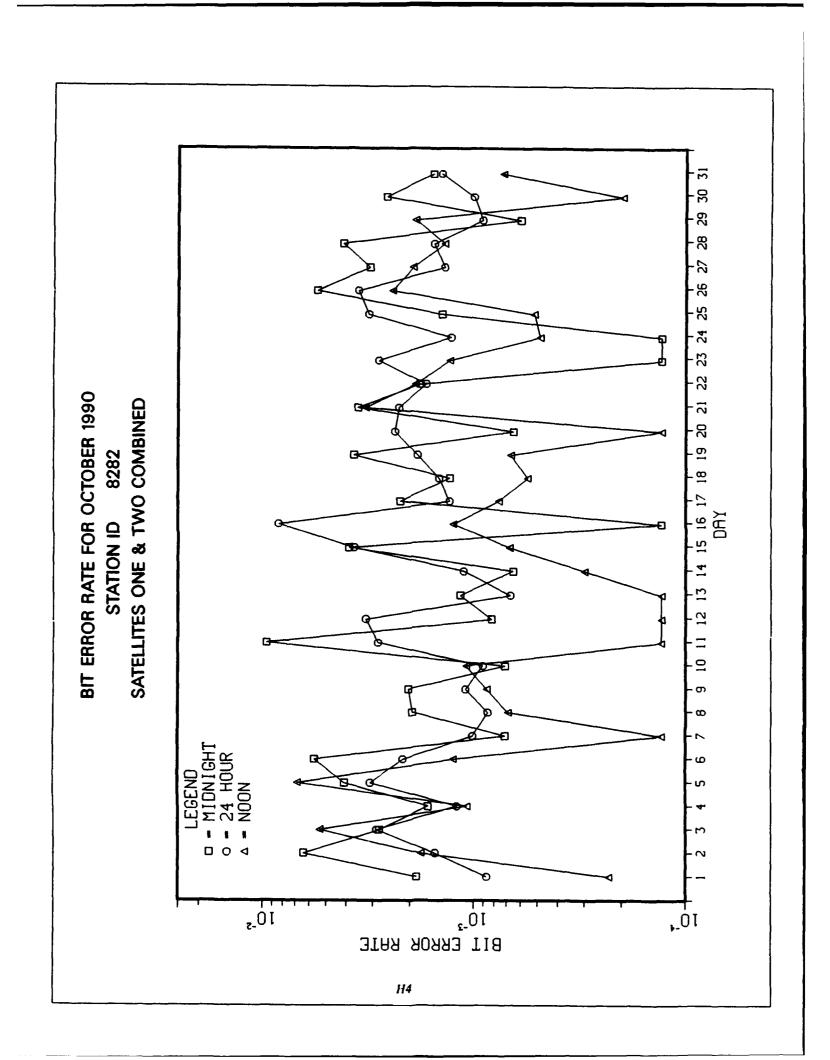
DAILY BIT-ERROR-RATE DATA FOR OCTOBER 1990



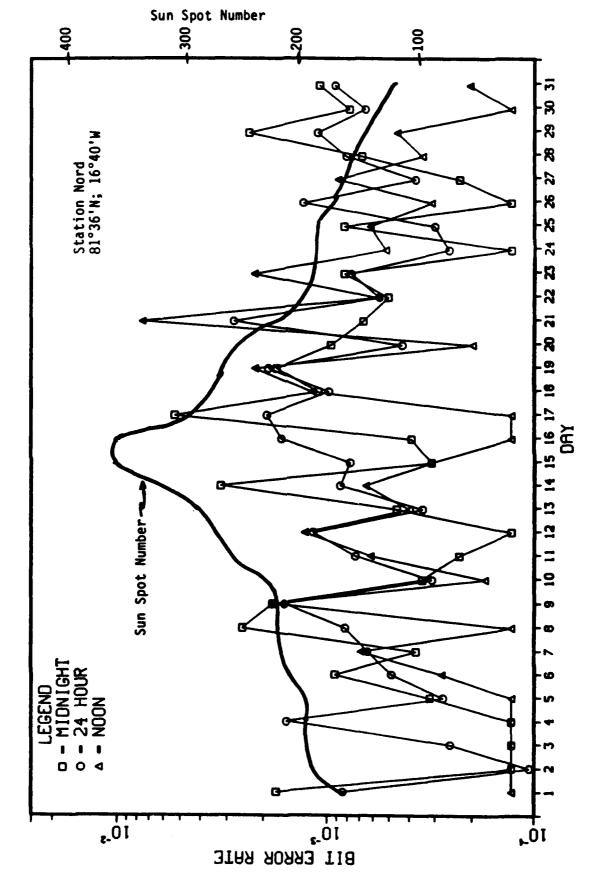
	Station	Location	WMO-NR	Argos-MR	Established
A-	Hell Lend	81 "44'N, 59"00'W	04-207	8286	jul.1982
B-	Carey Ser	76*38'N,73*00'H	04-203	8187	Aug. 1979
C-	Edderfugleder	74*02'N, 57*49'W	04-208	8294	Sep.1981
D -	Nugssuaq	70°41'N, 54°37'W	04-214	8295	Aug. 1982
E -	Agto	67*47'N,53*58'W	04-226	8296	Aug. 1983
F-	Sioralik	65°01'N, 52°33'W	04-242	8293	Jun. 1983
G-	Frd.håbs isblink	62*34'N, 50*25'W	04-253	8292	Jun. 1982
H -	Munerssuit	60°46'N,48°25'W	04-266	0291	Jun. 1981
I -	Angissoq	59*59'N,45*12'W	04-285	8290	Jun. 1981
J-	Prins Chr.sund	40°02'8,43°07'8	04-390	8297	Okt.1982
K-	Ikermierssuk	61°56'N,42"04'W	04-381	6280	Aug.1978
L-	Aputiteq	67°47'N,32°18'W	04-351	6261	Aug. 1978
M-	Daneborg	74-18-N, 20-13-W	04-330	8282	Aug. 1978
N-	Station Mord	81°36'N, 16°40'W	04-312	8283	Sep.1979
0 -	Kap Haraid Holtke	82°09'N, 29°53'W	04-305	8284	Aug. 1979
P-	Kap Morris Jessup	83°40'N,33°22'W	04-301	8285	Jul. 1979
S -	Kap Tobin	70°25'N,21°58'W	04-340	8288	Aug.1985
T-	Ikeroit	64*47'N,40*18'W	04-373	8289	Okt.1986
Q-	Krøyers Holme	80-41 'N, 13-55 W	04-313	8299	Jul.1984
R-	Upernevik	72*47'N, 56*10'W	04-209	8298	Aug. 1984

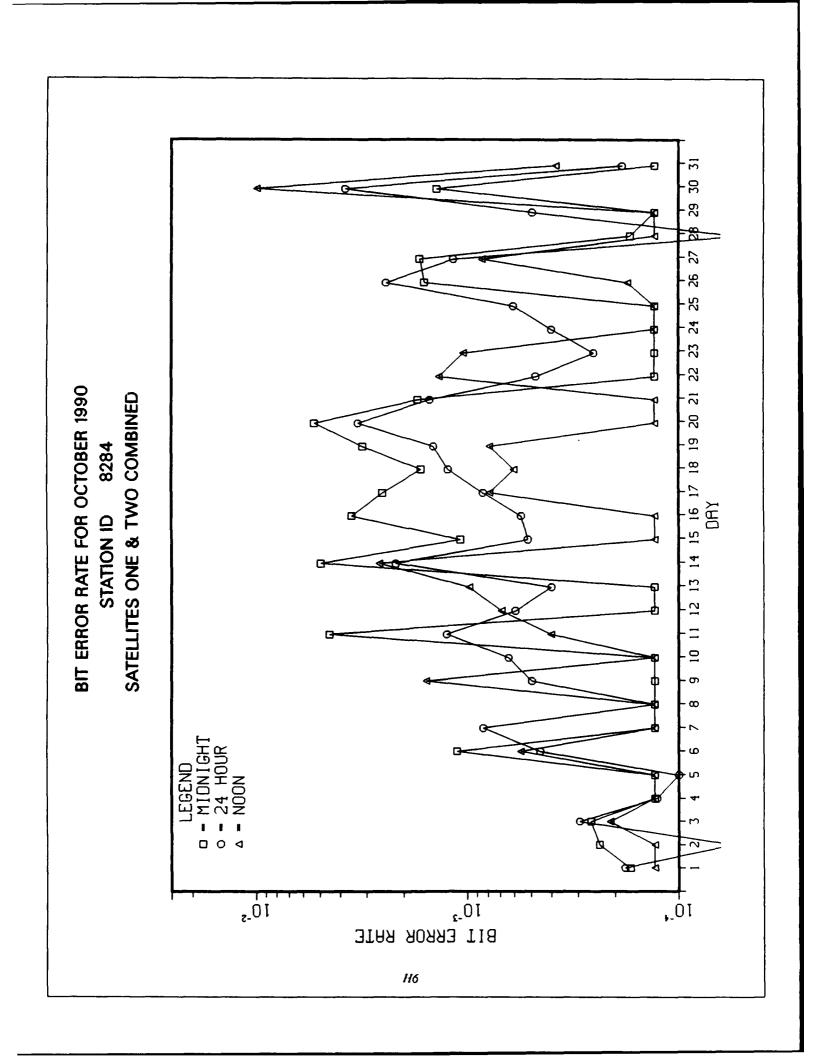


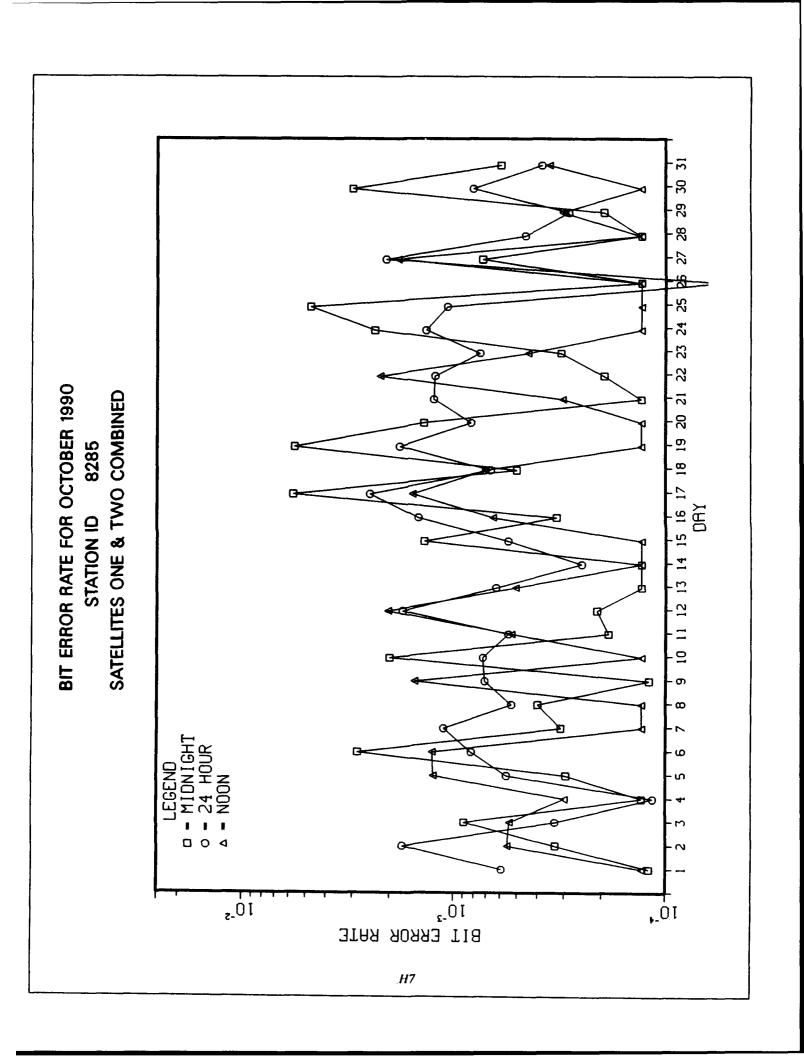


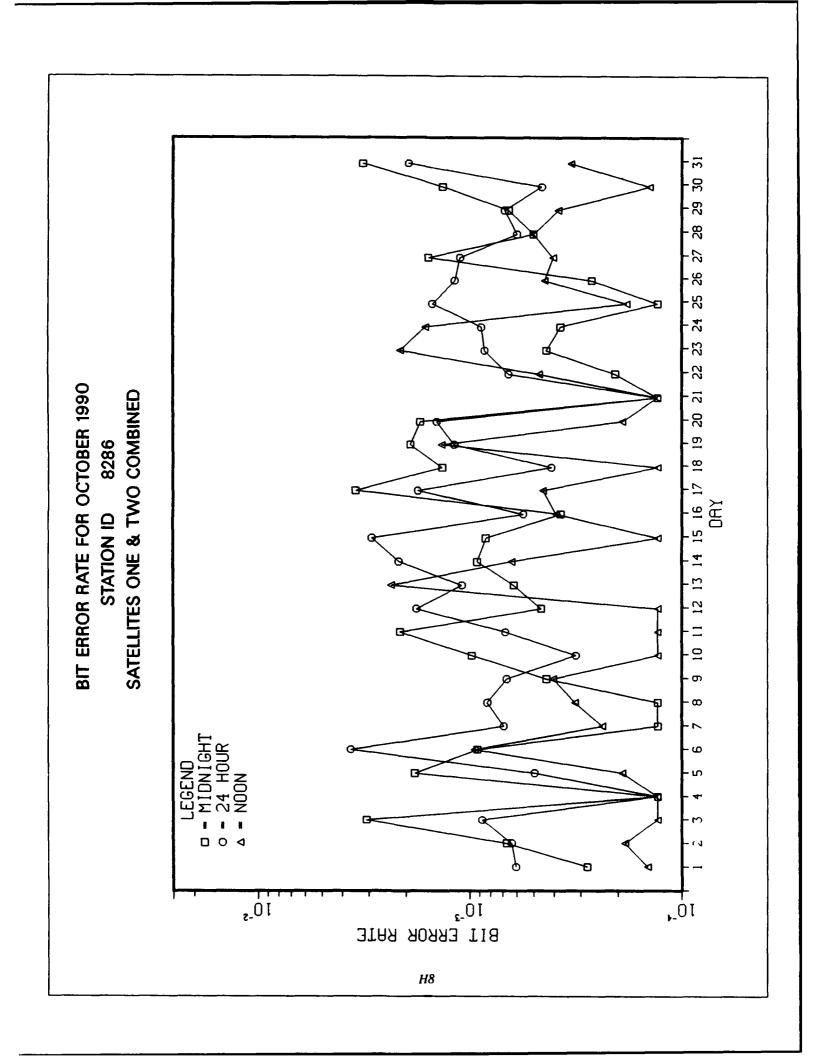


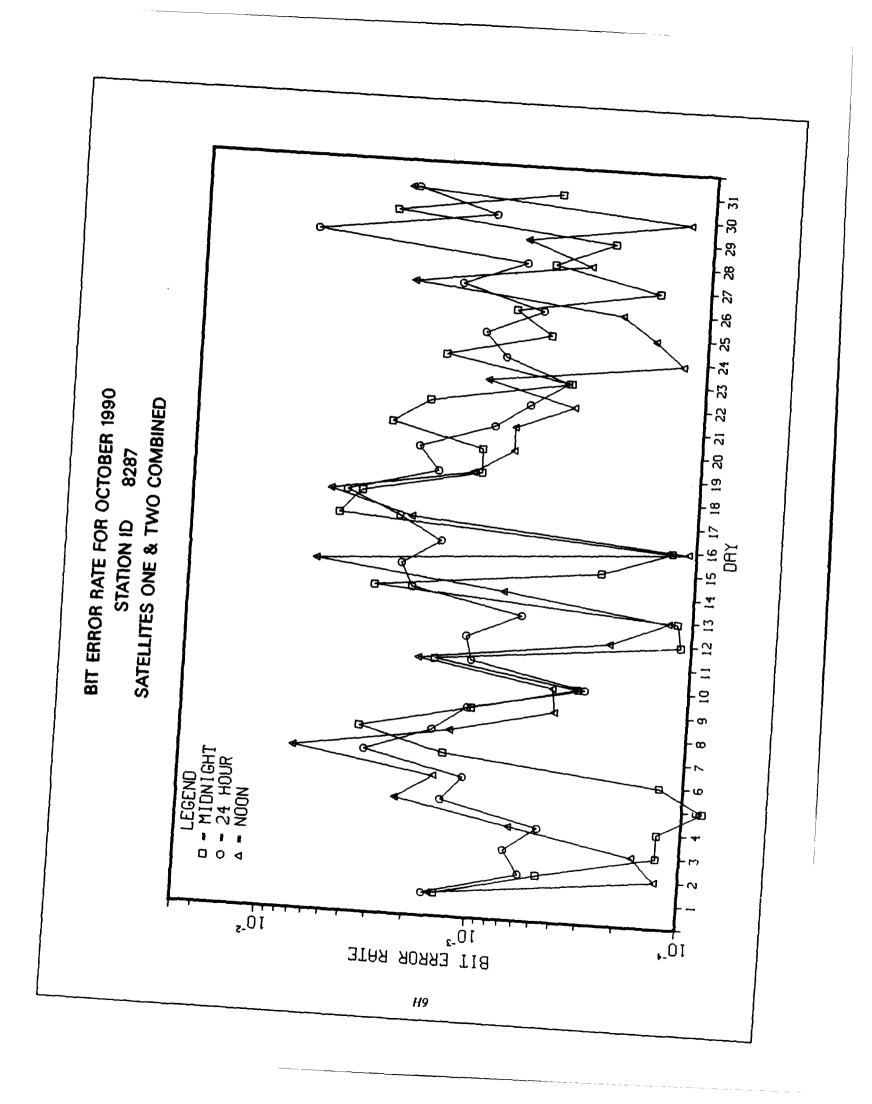
BIT ERROR RATE FOR OCTOBER 1990
STATION ID 8283
SATELLITES ONE & TWO COMBINED

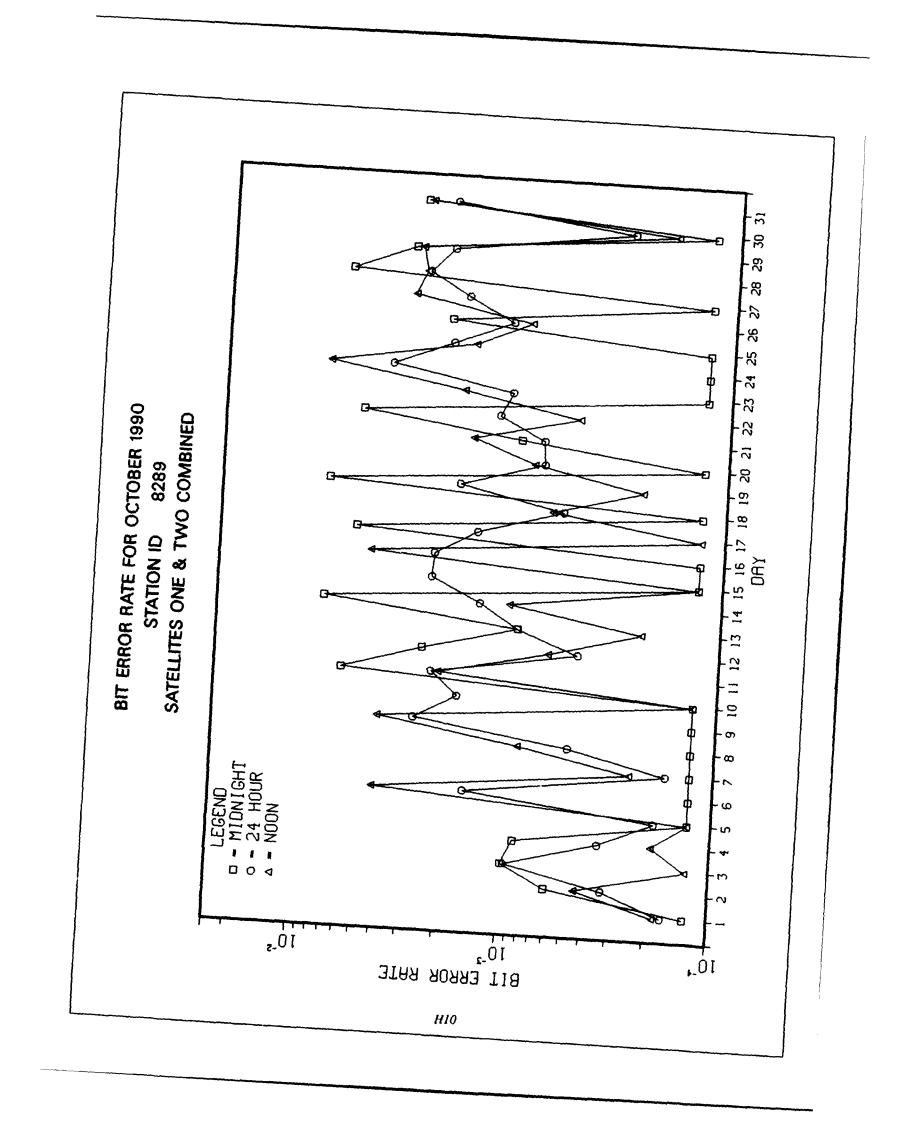


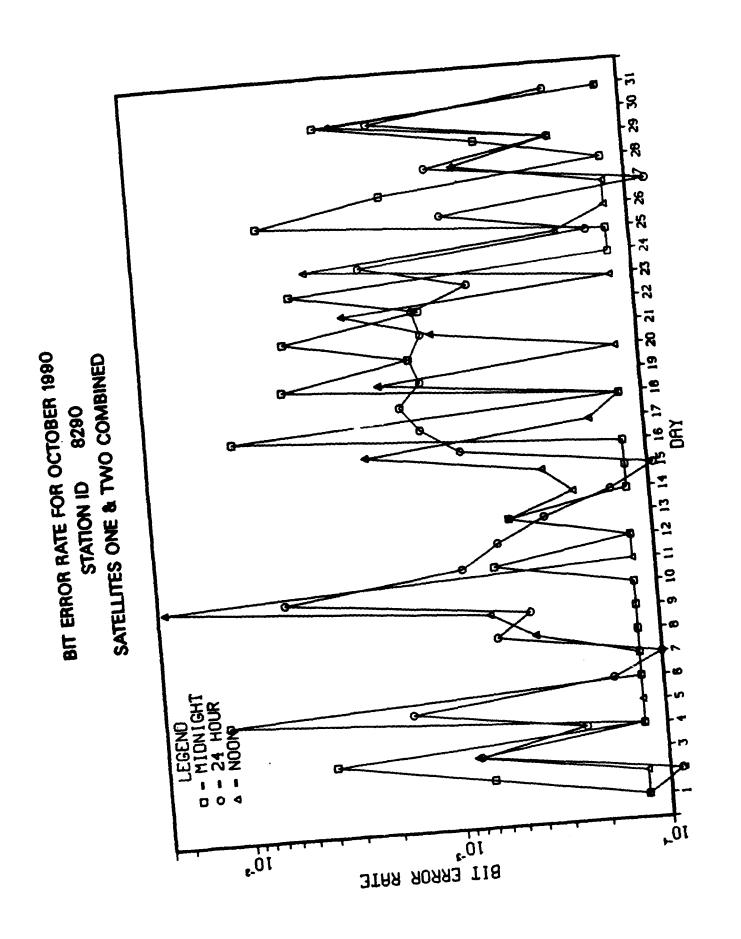


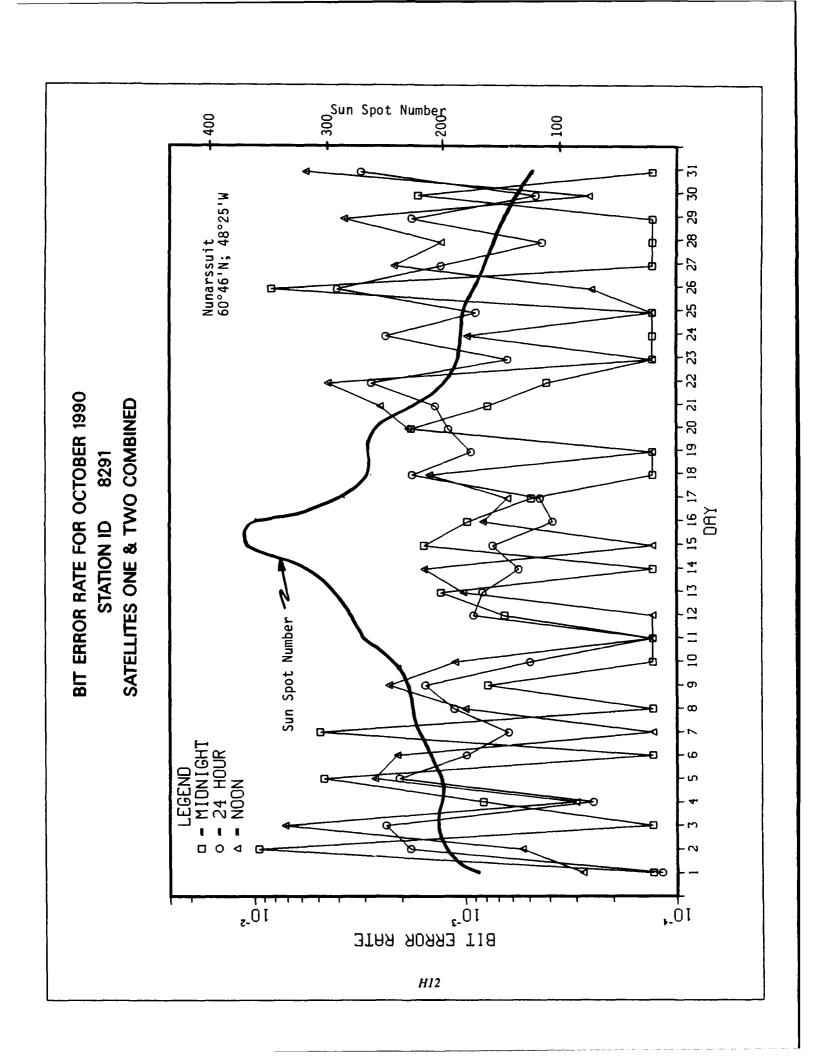


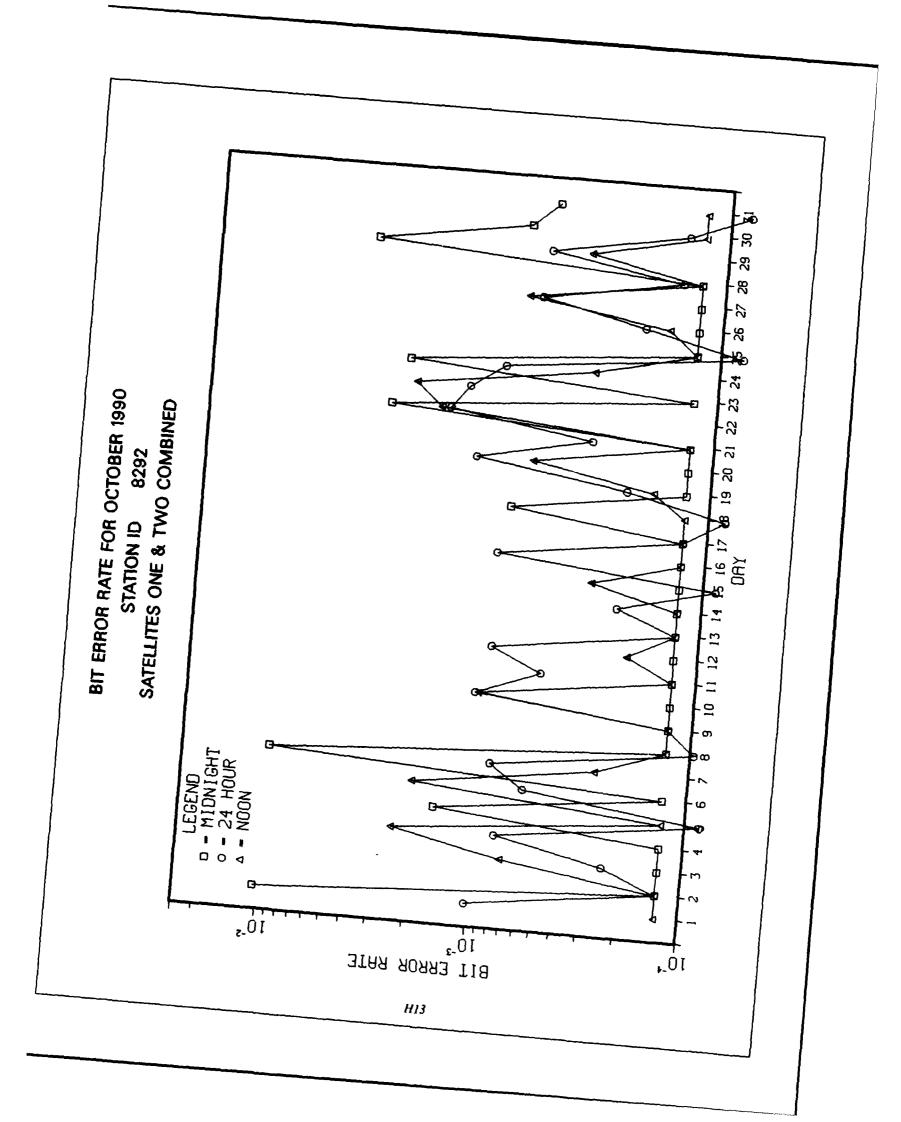


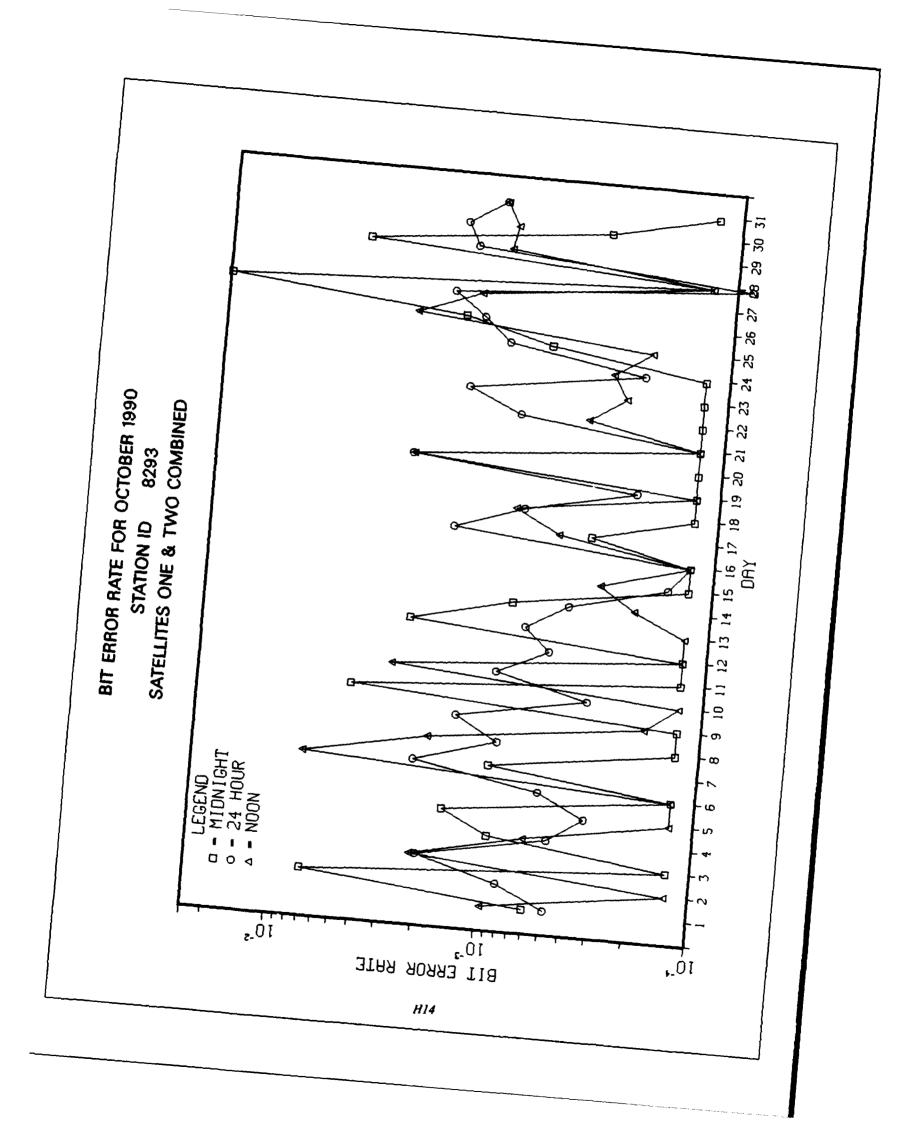


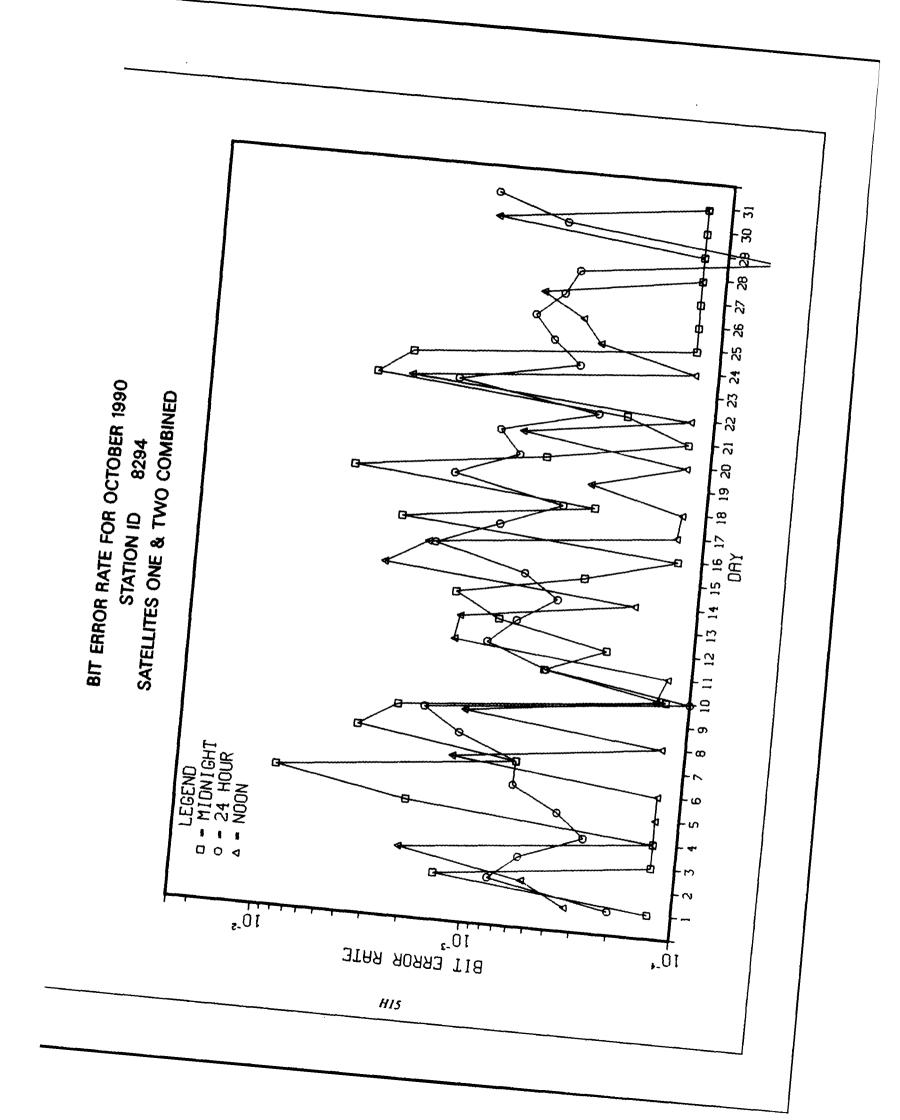




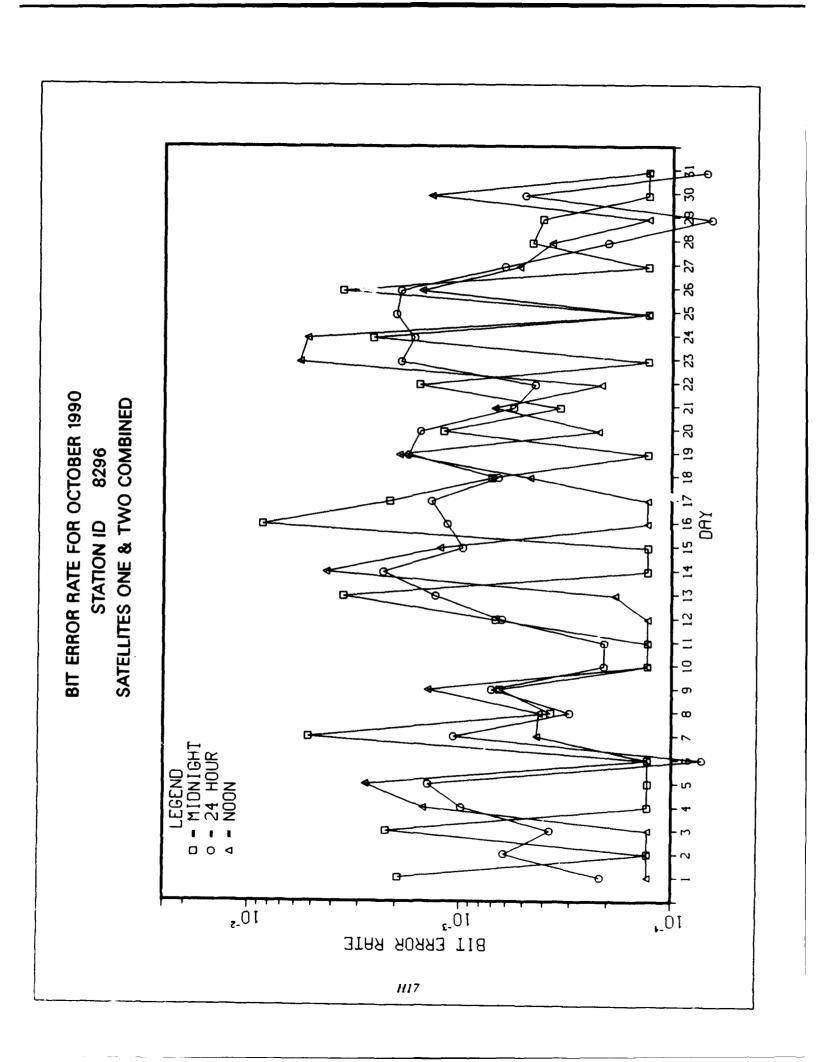


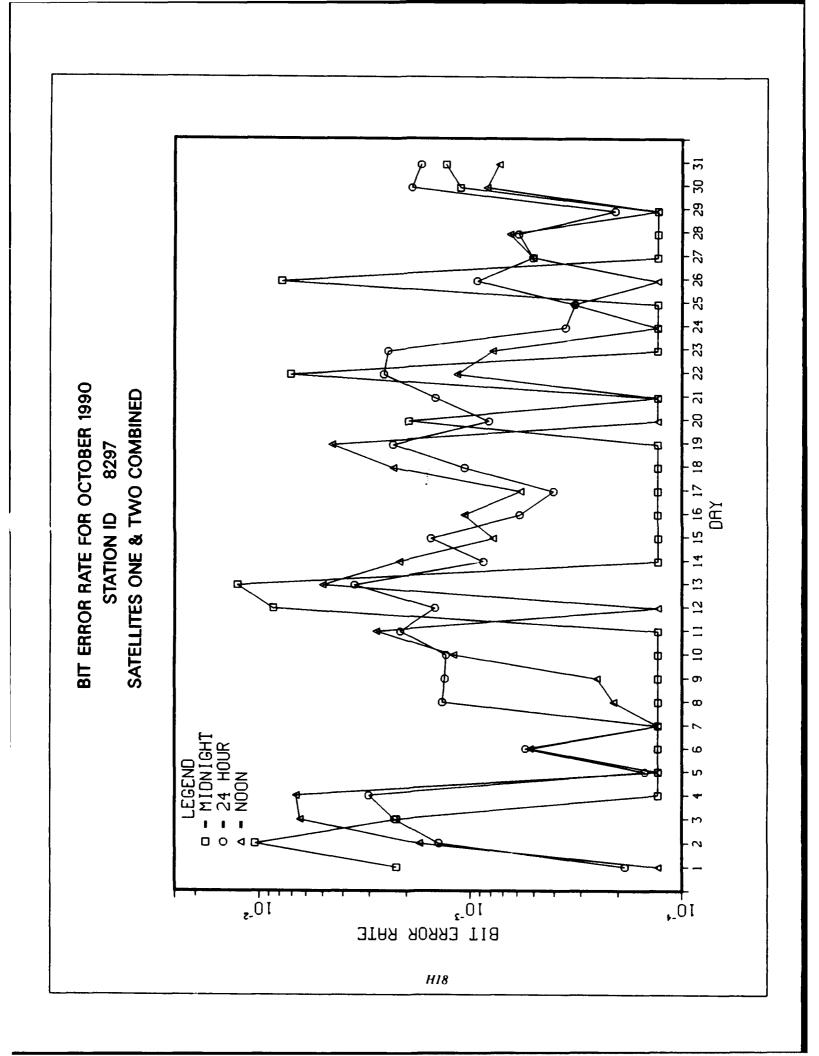


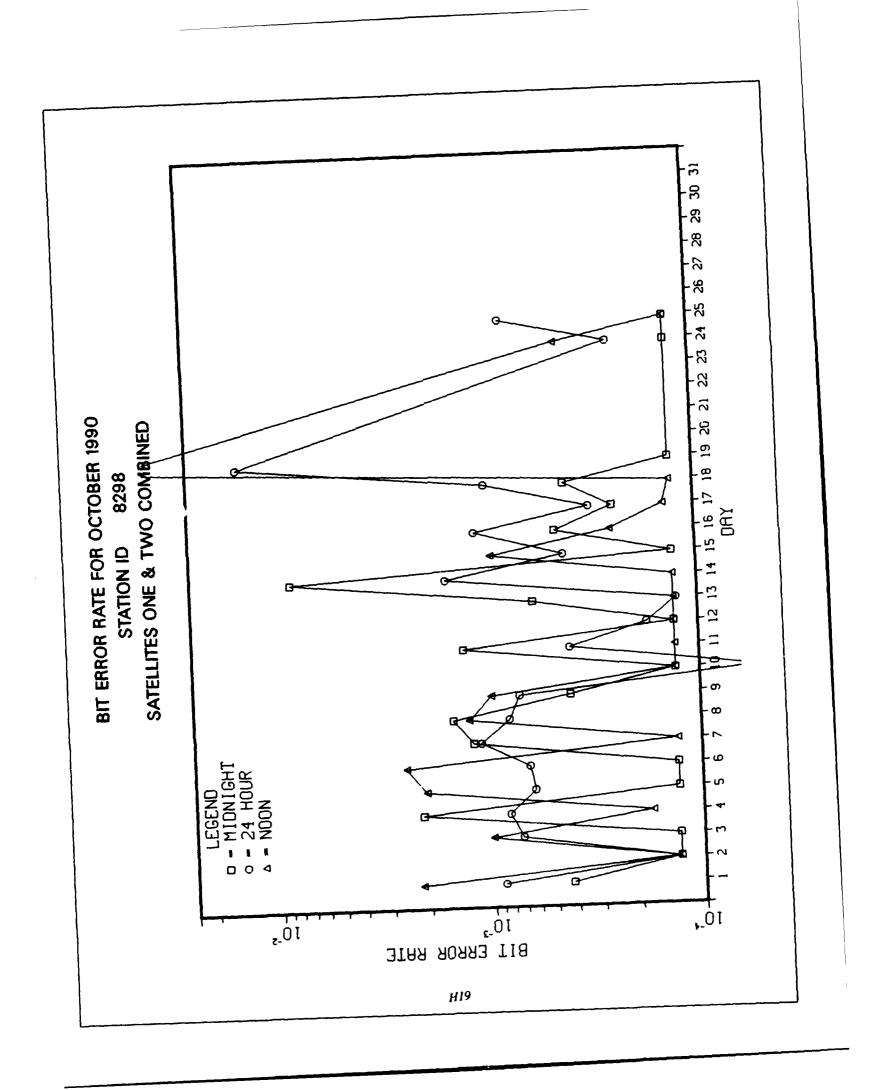


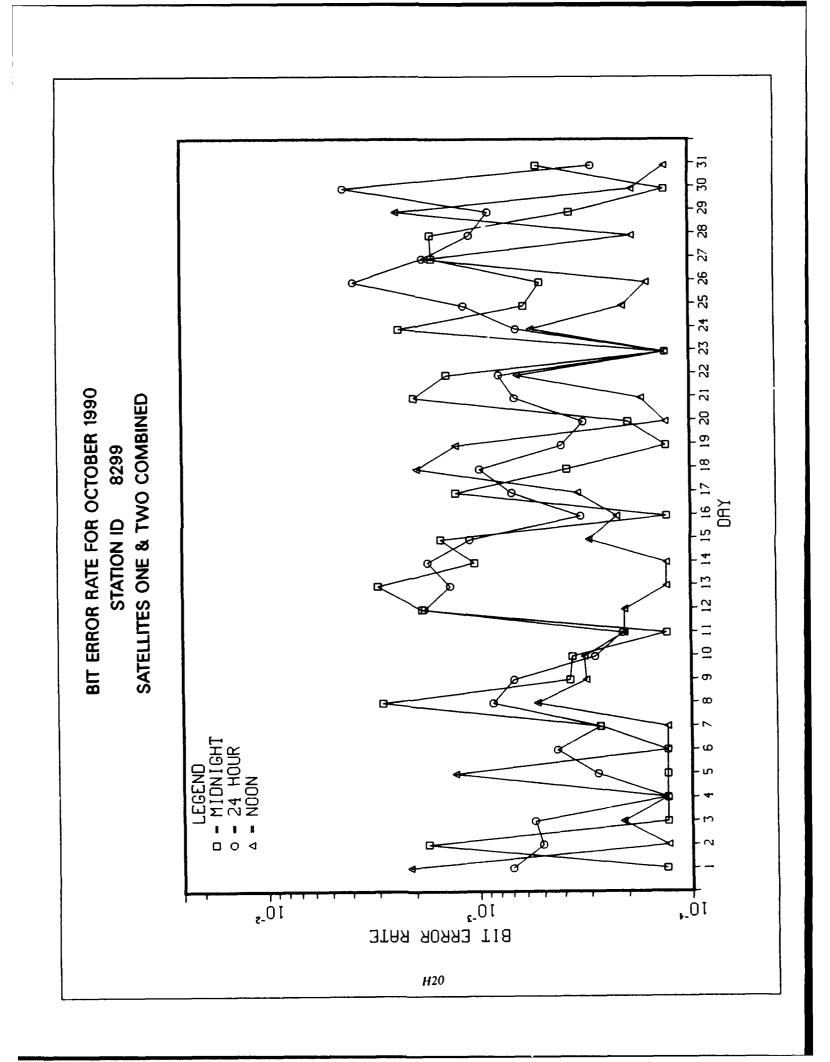


Sun Spot Number 400 Nugssuaq 70°41'N; 54°37'W 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 2) BIT ERROR RATE FOR OCTOBER 1990 SATELLITES ONE & TWO COMBINED 8295 STATION ID Sun Spot Number ~ 10. BIT ERROR RATE 10. H16



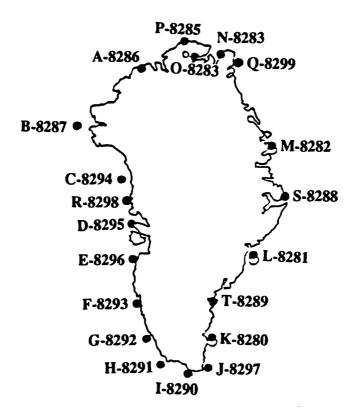






APPENDIX I

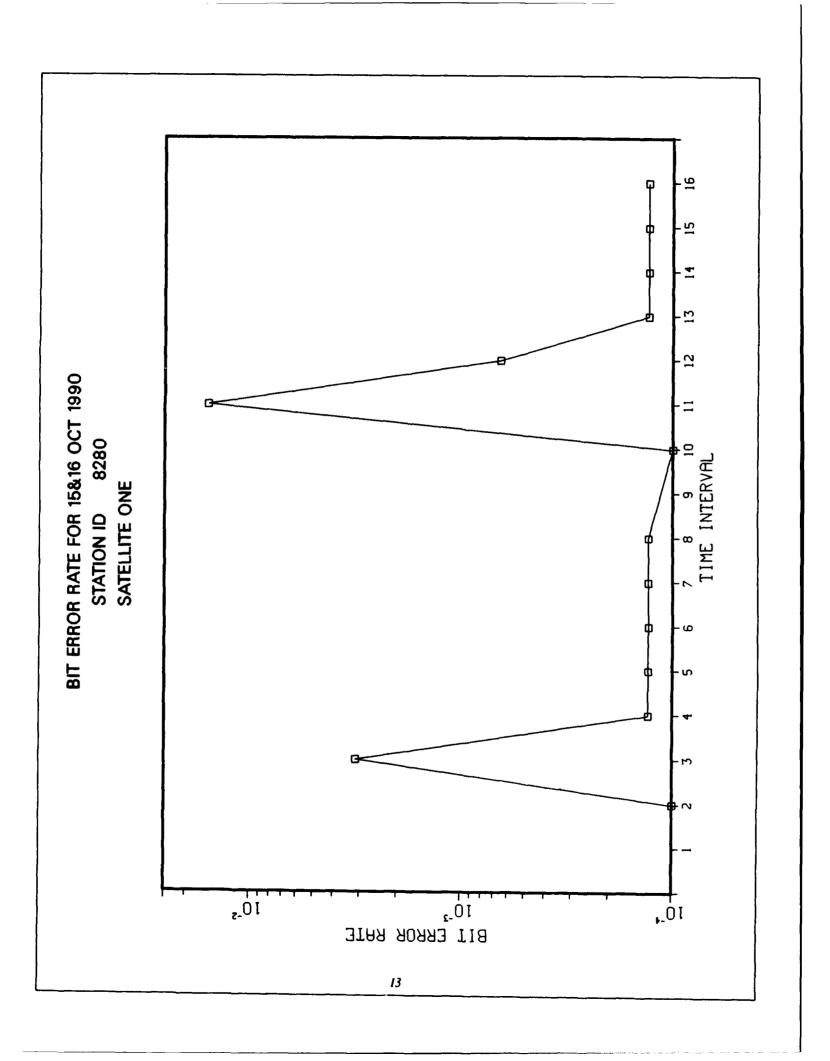
HOURLY BIT-ERROR-RATE DATA FOR 15-16 OCTOBER 1990

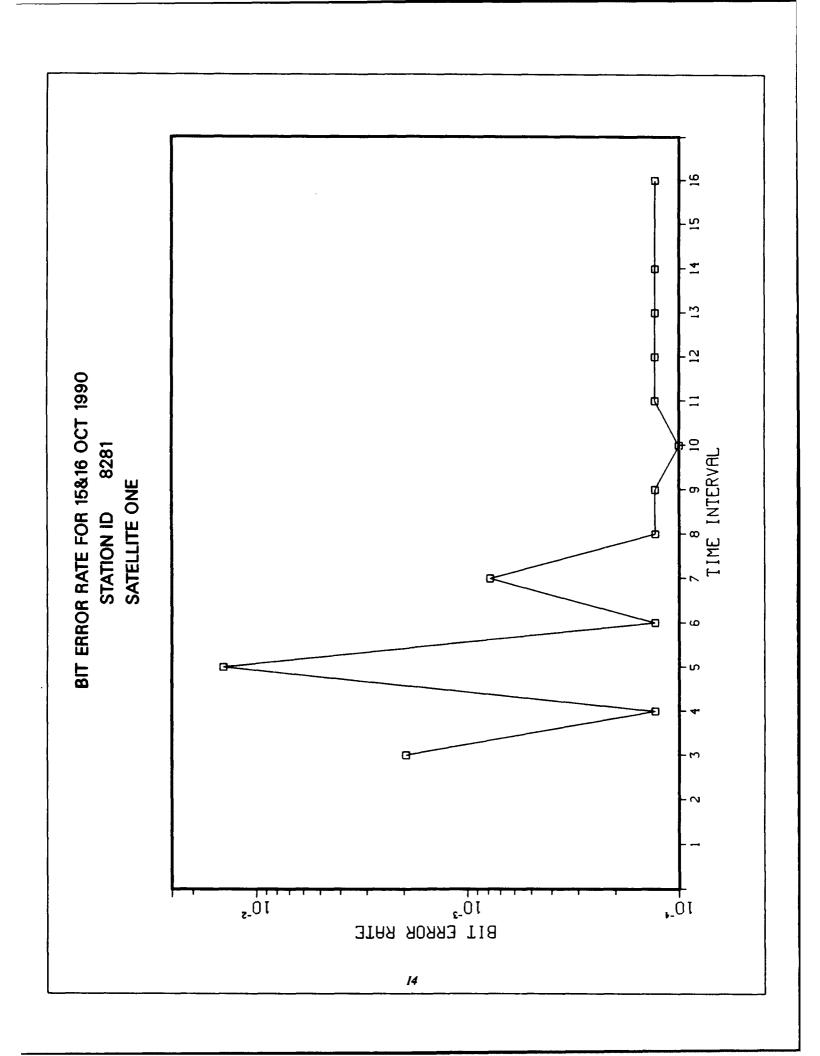


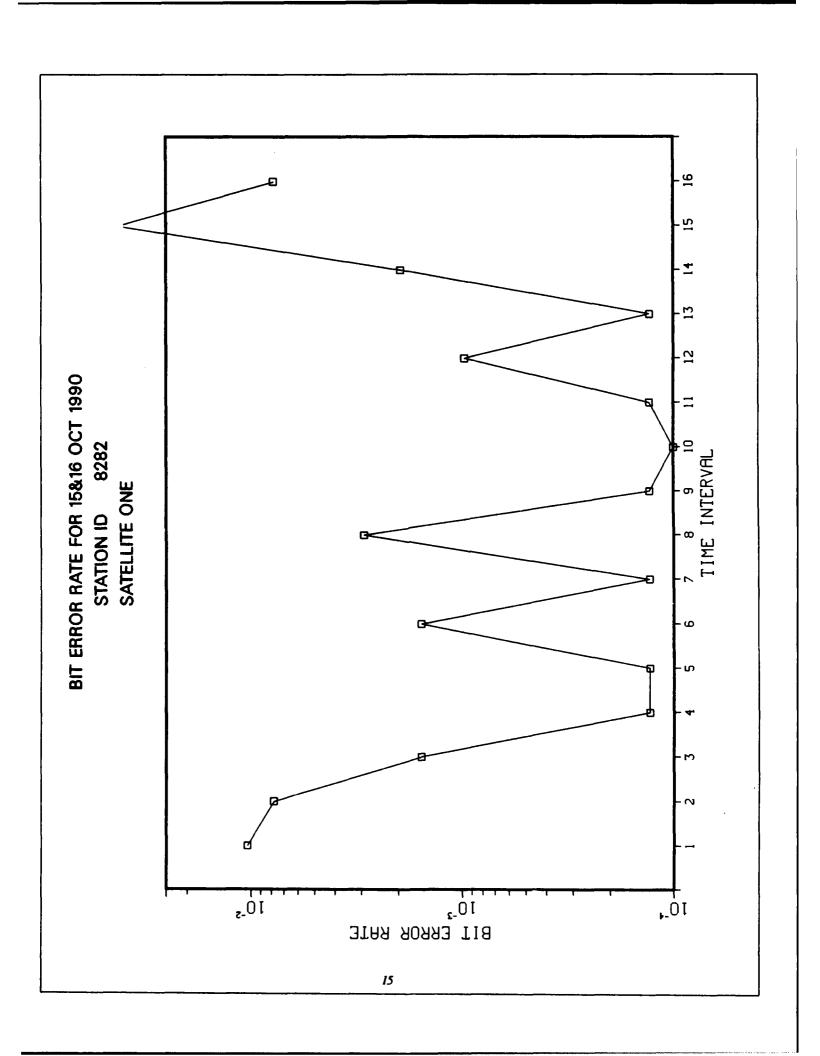
	Station	Location	MMO-NR	Argos-MR	Established
A -	Hall Land	81*44'N,59*00'W	04-207	8286	jul.1982
B -	Carey #er	76*38'N,73*00'W	04-203	8187	Aug. 1979
C -	Edderfugleser	74°02'N,57°49'W	04-208	8294	Sep.1981
D -	Mugssueq	70*41'H,54*37'W	04-214	8295	Aug. 1982
E -	Agto	67*47'N, 53*58'N	04-228	8296	Aug. 1983
F-	Sioralik	65*01'N,52*33'W	04-242	8293	Jun. 1983
G-	Frd.håbs isblink	62*34'N,50*25'W	04-253	8292	Jun.1982
H -	Munarssult	60*46'N,48*25'W	04-266	8291	Jun. 1981
I -	Angissoq	59*59'N,45*12'W	04-285	8290	Jun. 1981
J-	Frins Chr.sund	60°02'N,43°07'W	04-390	8297	Okt.1982
K-	lkermiarssuk	61*56'N, 42*04'W	D4-301	8280	Aug. 1978
L-	Aputiteq	67*47'N,32*18'W	04-351	8281	Aug. 1978
M-	Denebarg	74*18'N,20*13'W	04-330	8282	Aug. 1978
N -	Station Mord	81-36'N, 16-40'W	04-312	8283	Sep.1979
0 -	Kap Haraid Holtke	82-09'N, 29-53'W	04-305	8284	Aug. 1979
P -	Kap Morris Jessup	83-40'N,33-22'W	04-301	8285	Jul.1979
S -	Kap Tobin	70°25'H,21°56'W	04-340	8288	Aug. 1985
T -	Ikermit	64*47'N, 40*18'W	04-373	8289	Okt.1986
Q-	Krøyers Holme	80*41'H,13*55'W	04-313	8299	Jul.1984
R -	Upernavik	72°47'M,56°10'W	04-209	8298	Aug. 1984

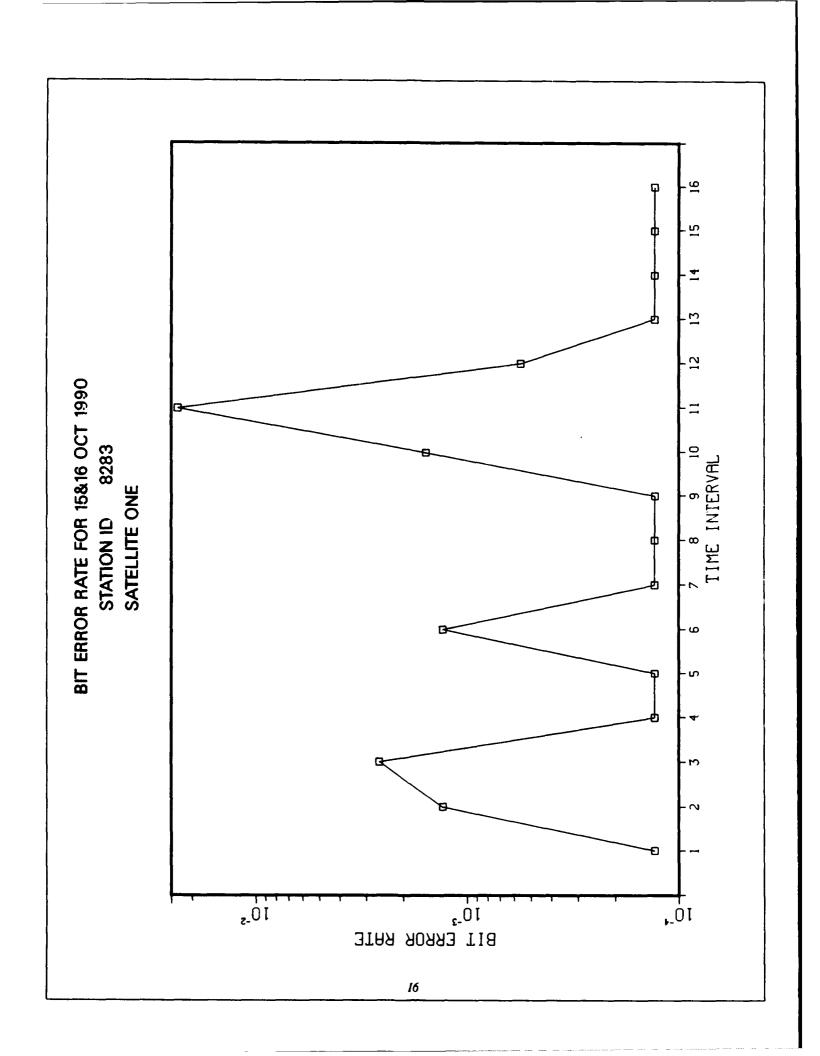
TIME INTERVAL KEY FOR 15 & 16 OCT 90 PLOTS

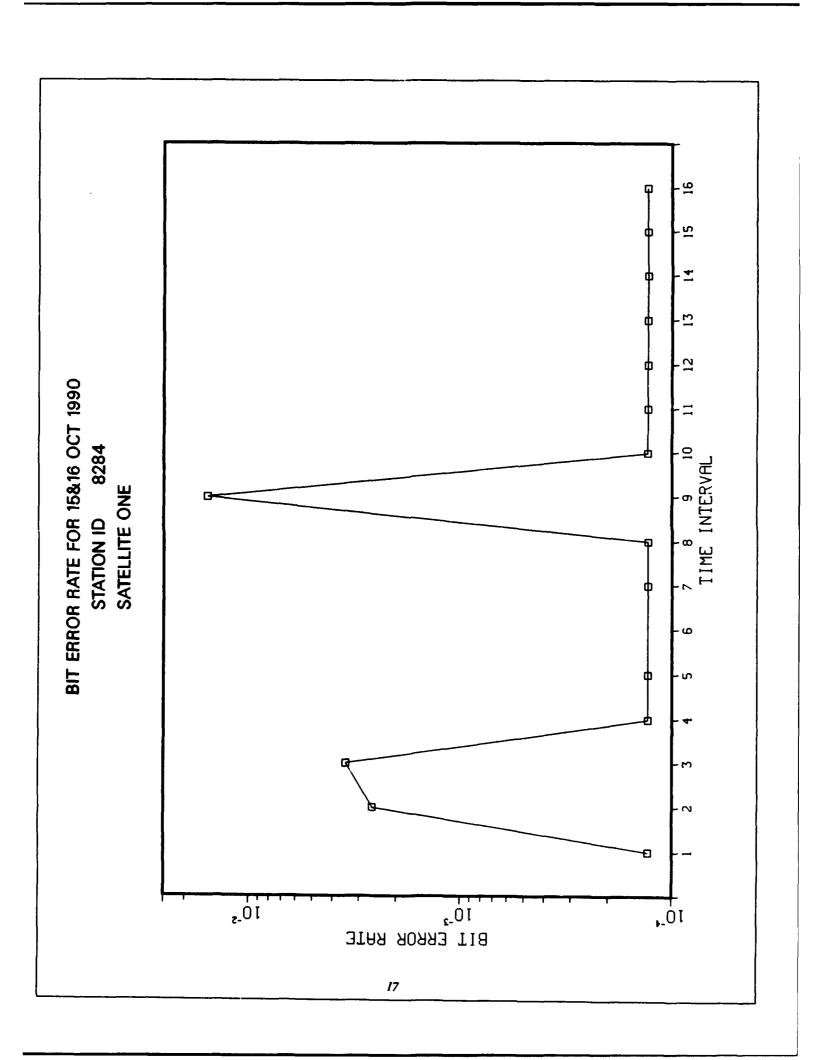
INTERVAL	DATE	TIME
1	15 OCT	2335-0225
2	ti .	0235-0525
3	11	0535-0825
4	11	0835-1125
5	17	1135-1425
6	11	1435-1725
7	11	1735-2025
8	n	2035-2325
9	16 OCT	2335-0225
10	11	0235-0525
11	11	0535-0825
12	**	0835-1125
13	11	1135-1425
14	11	1435-1725
15	11	1735-2025
16	11	2035-2325

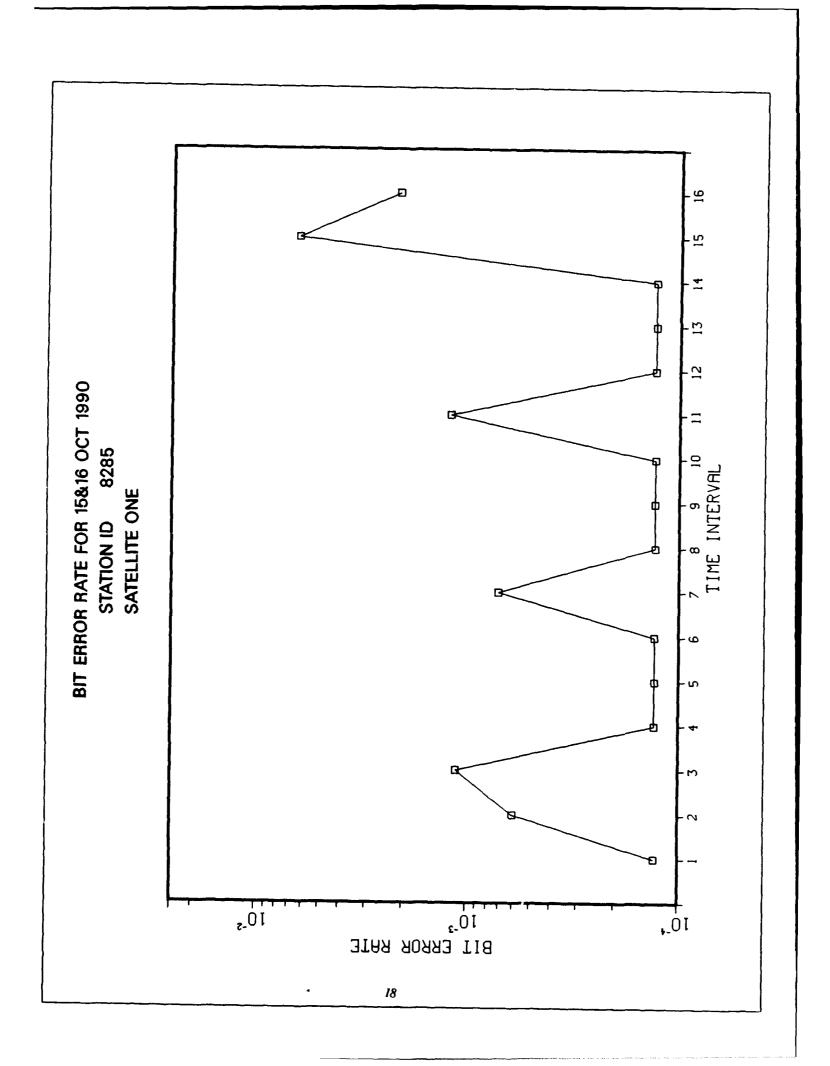


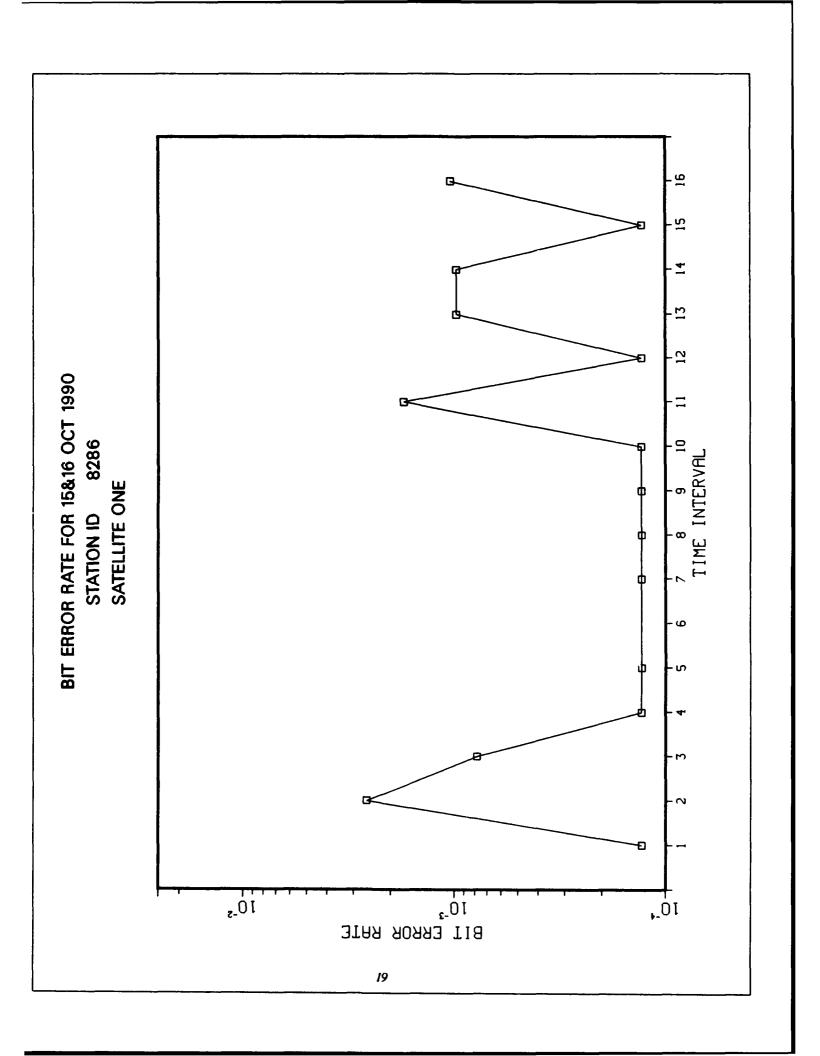


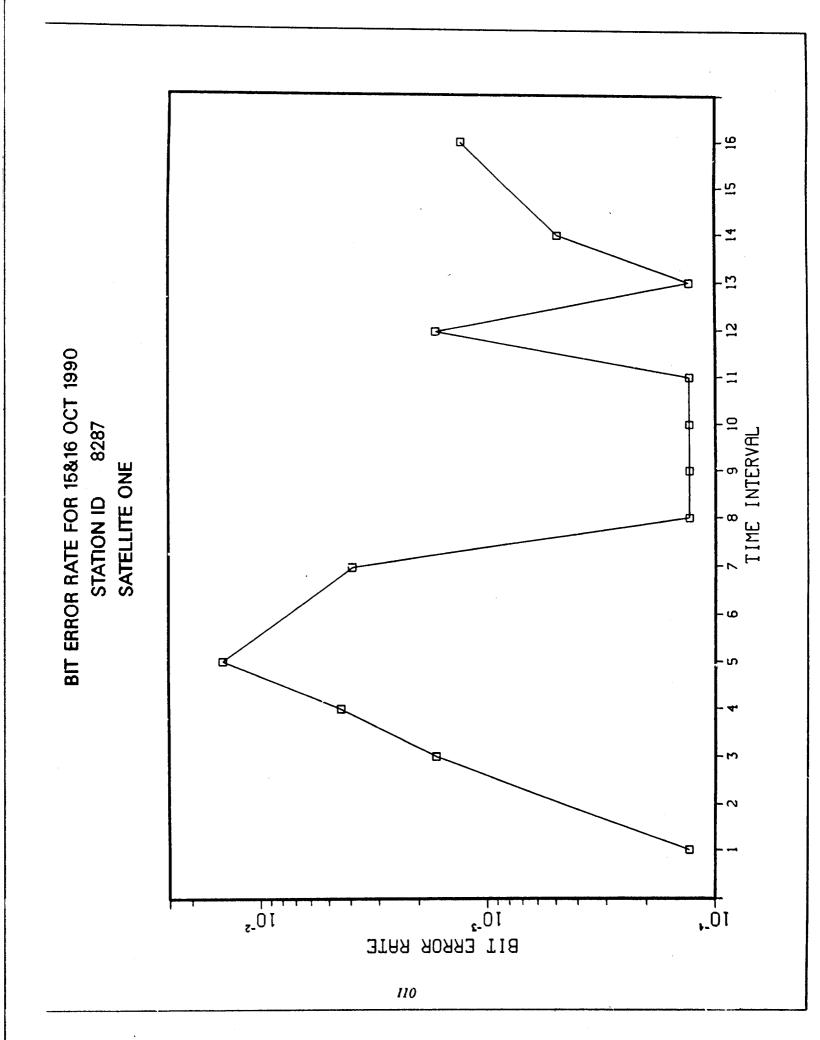


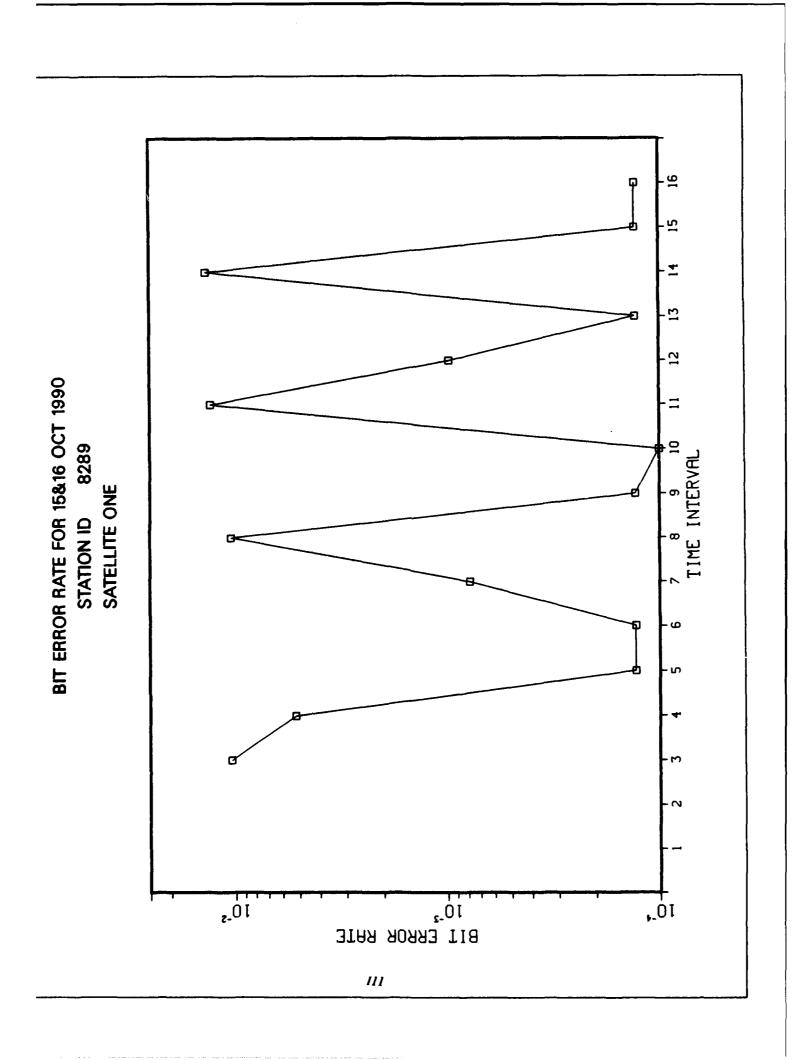


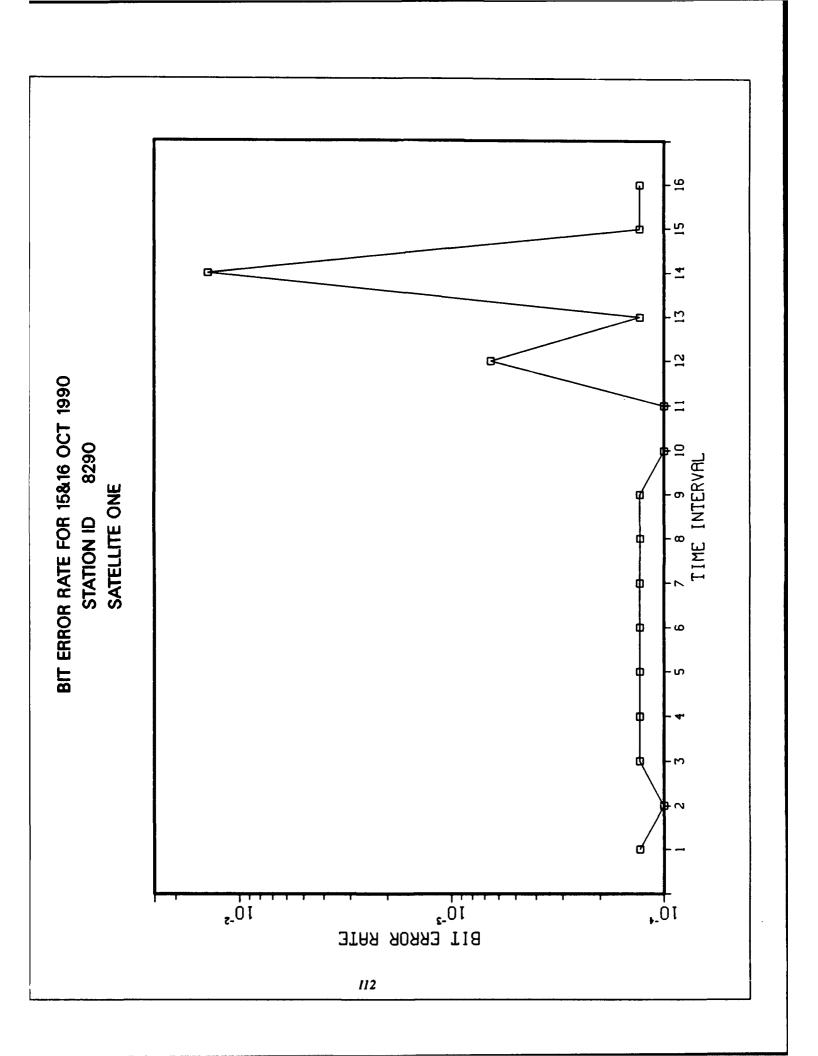


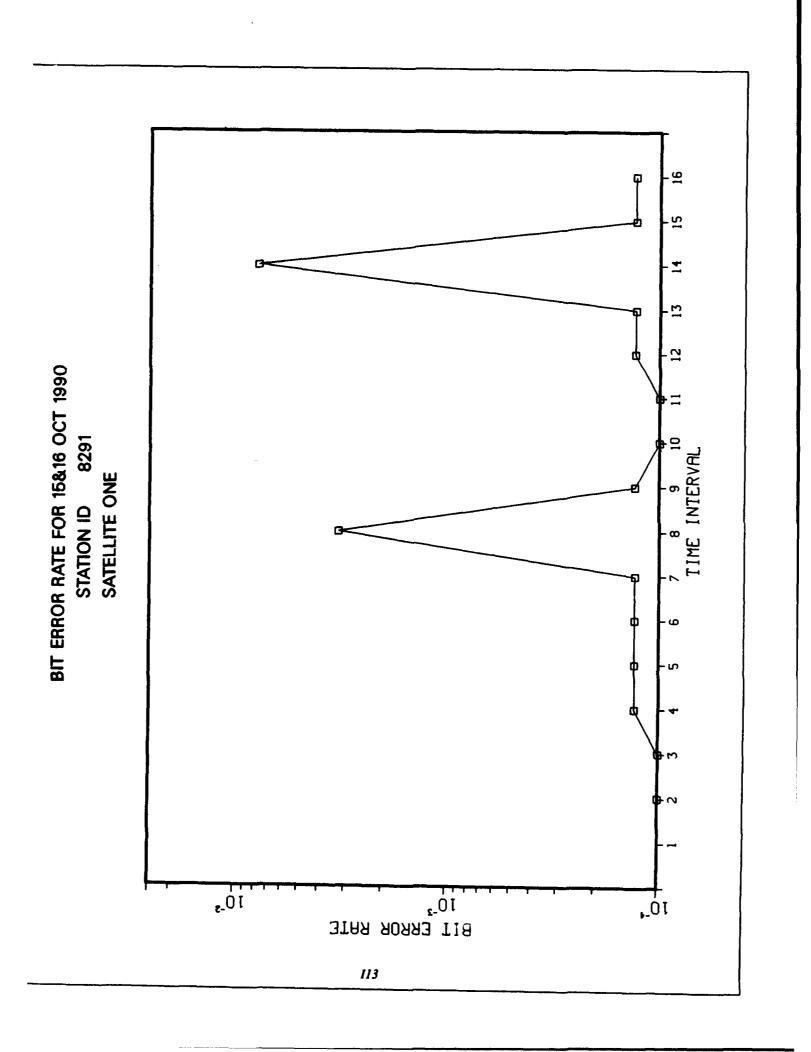


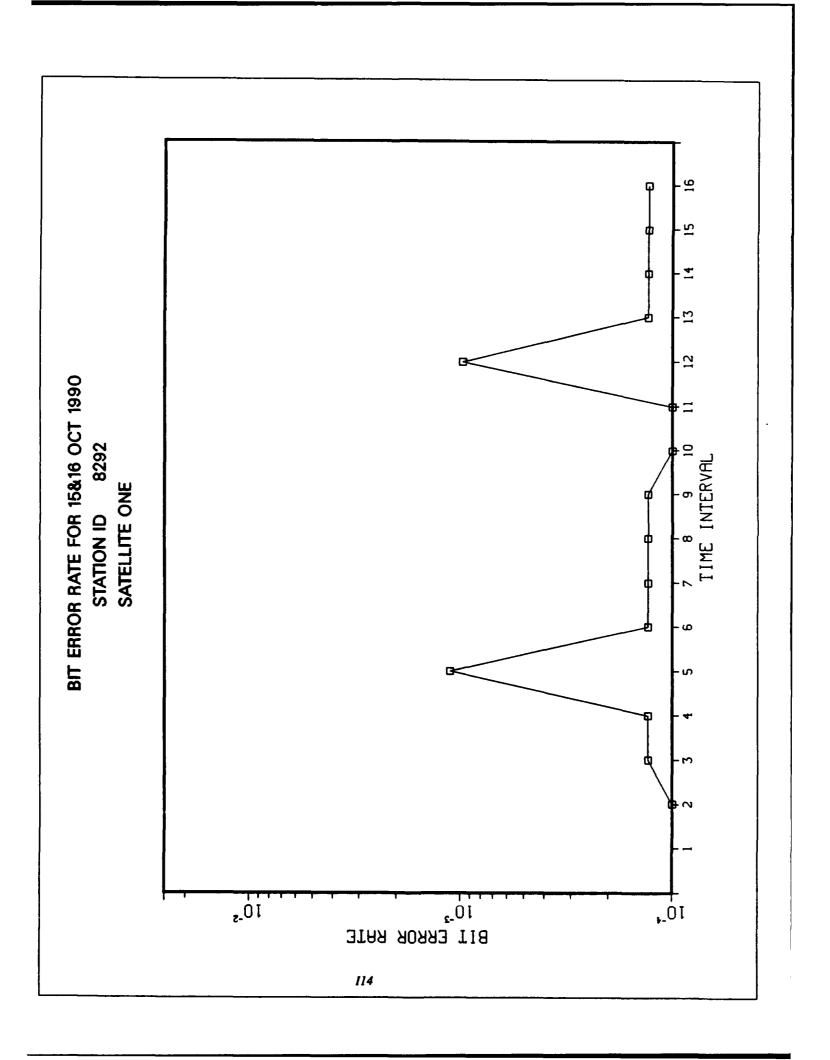


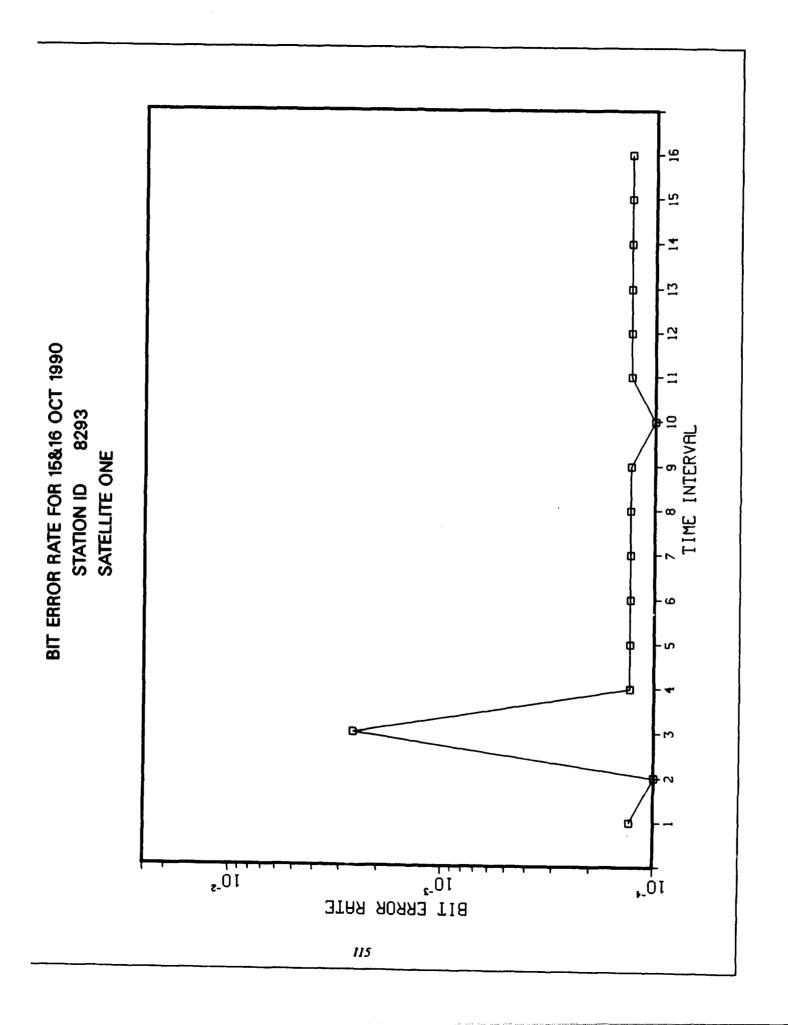


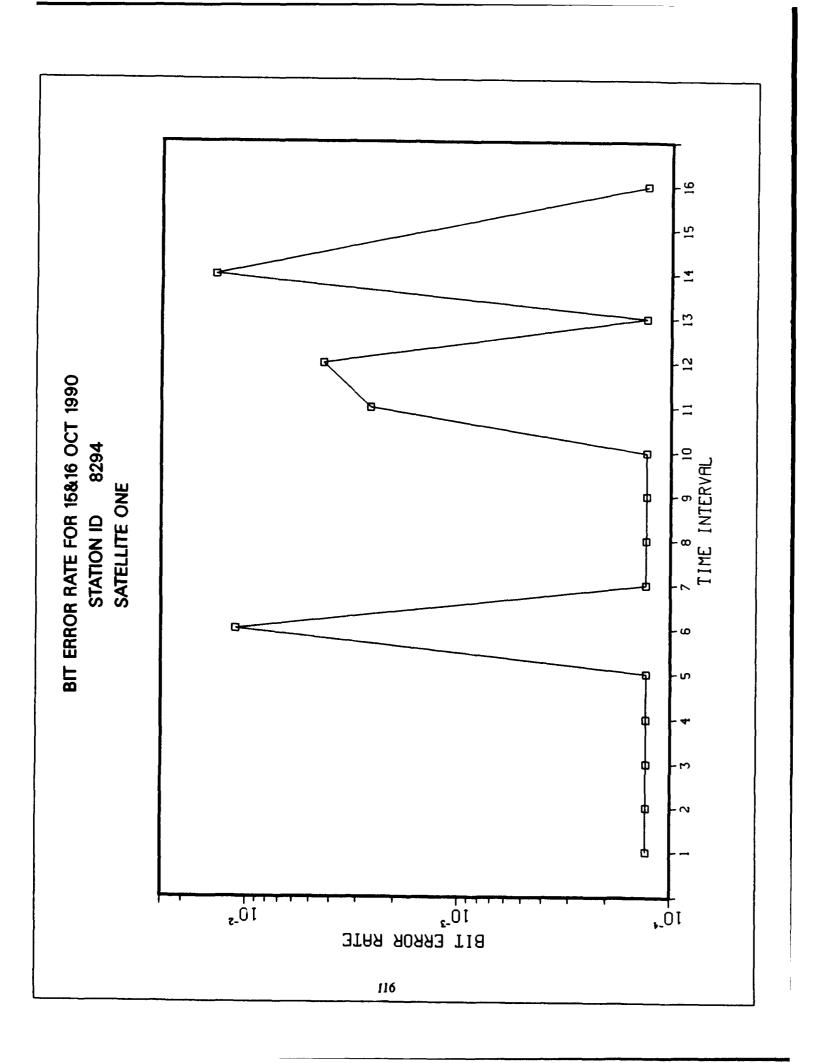


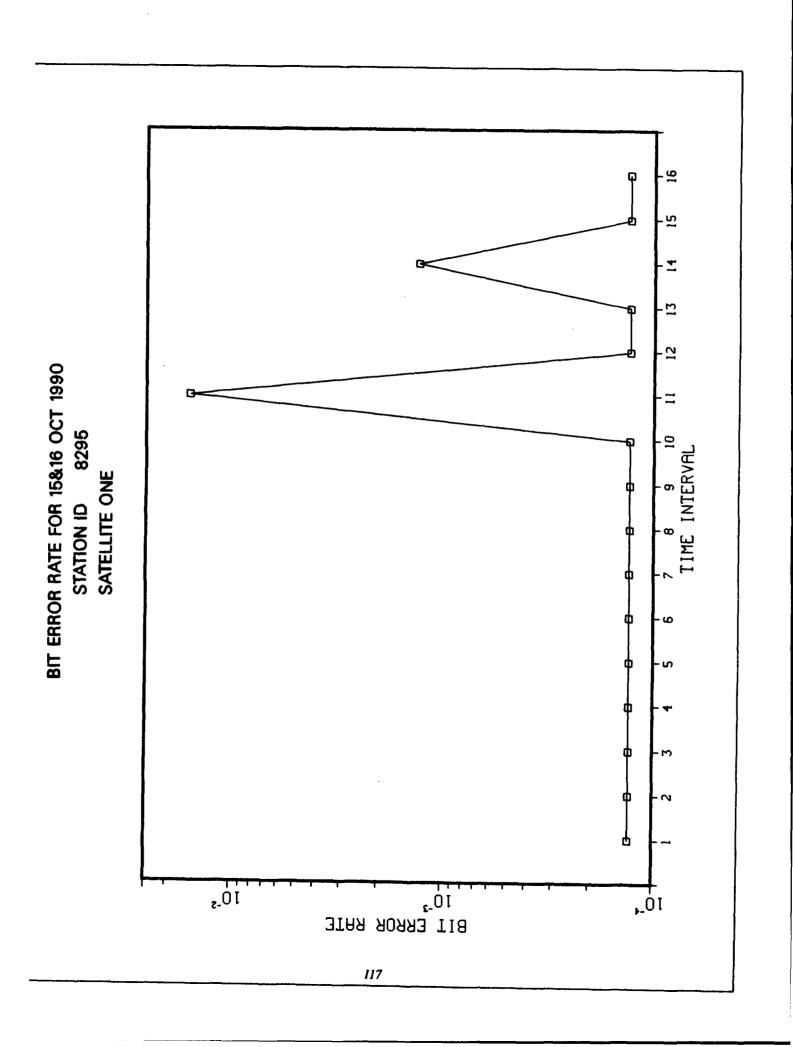


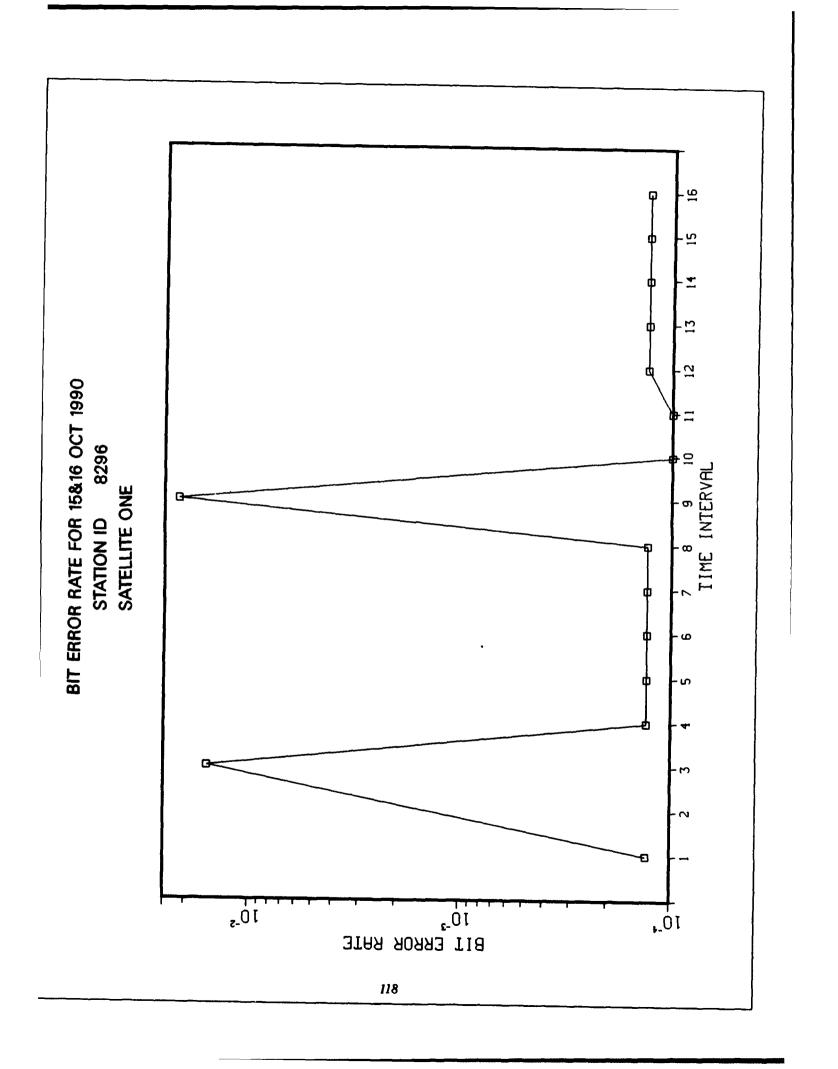


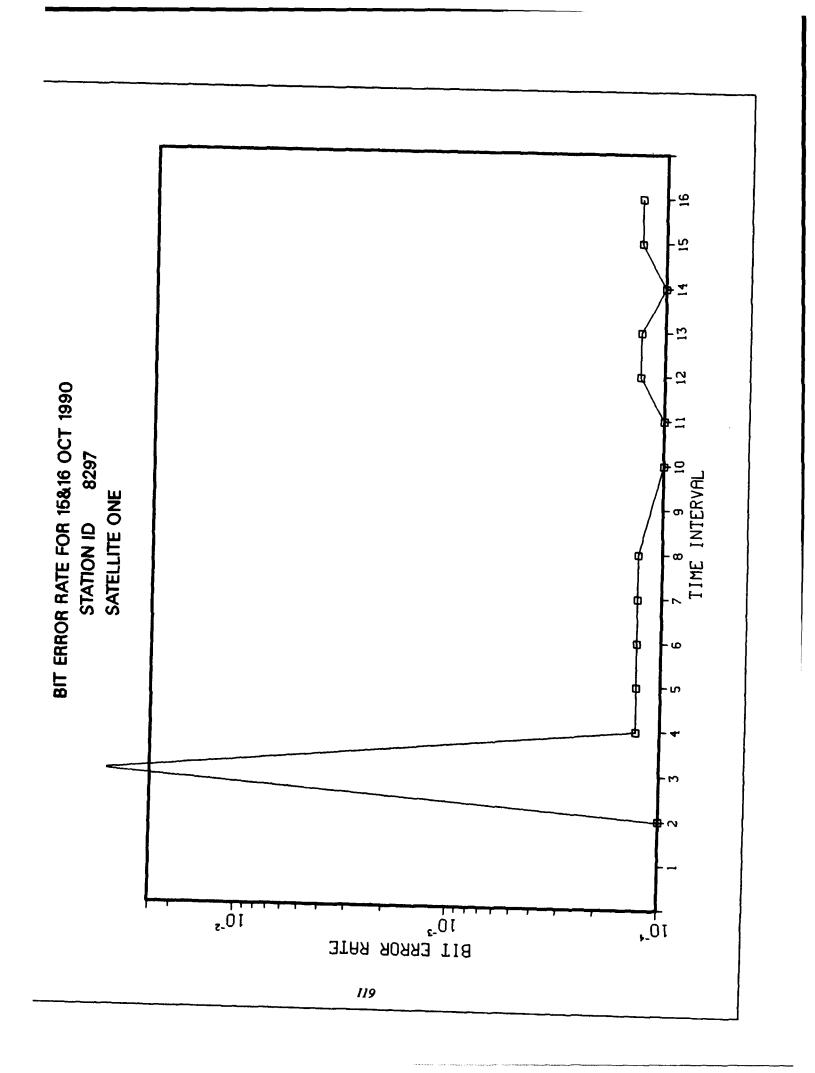


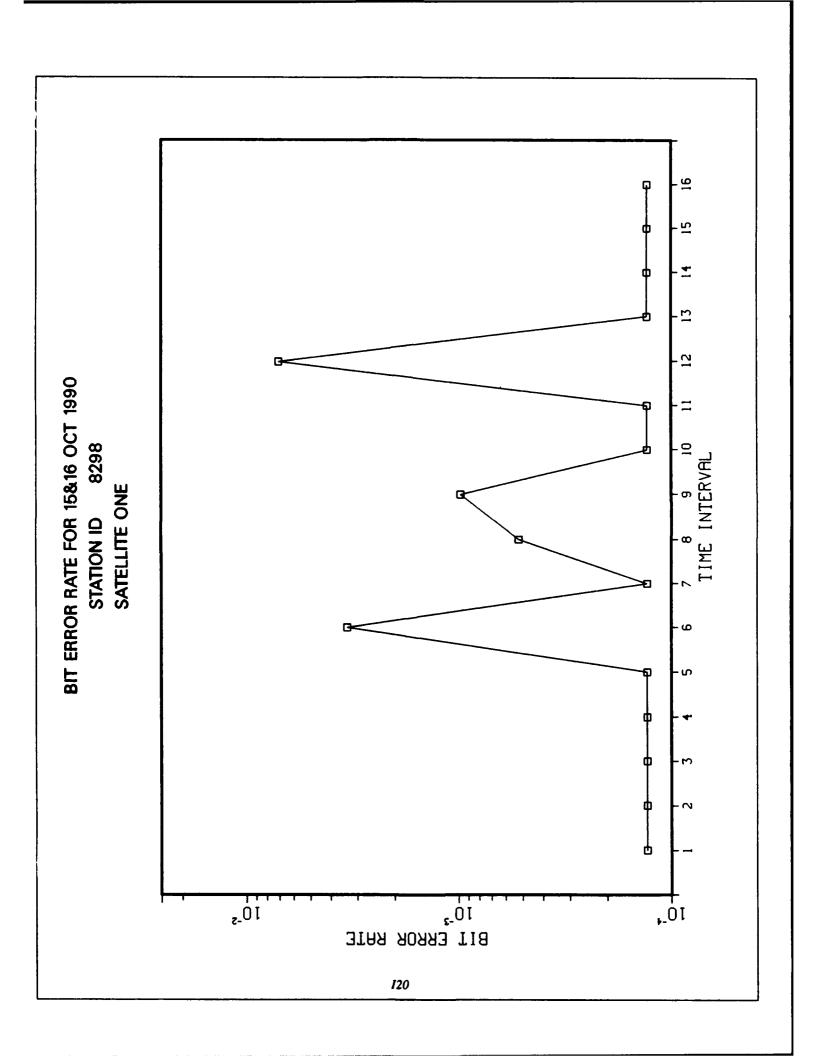


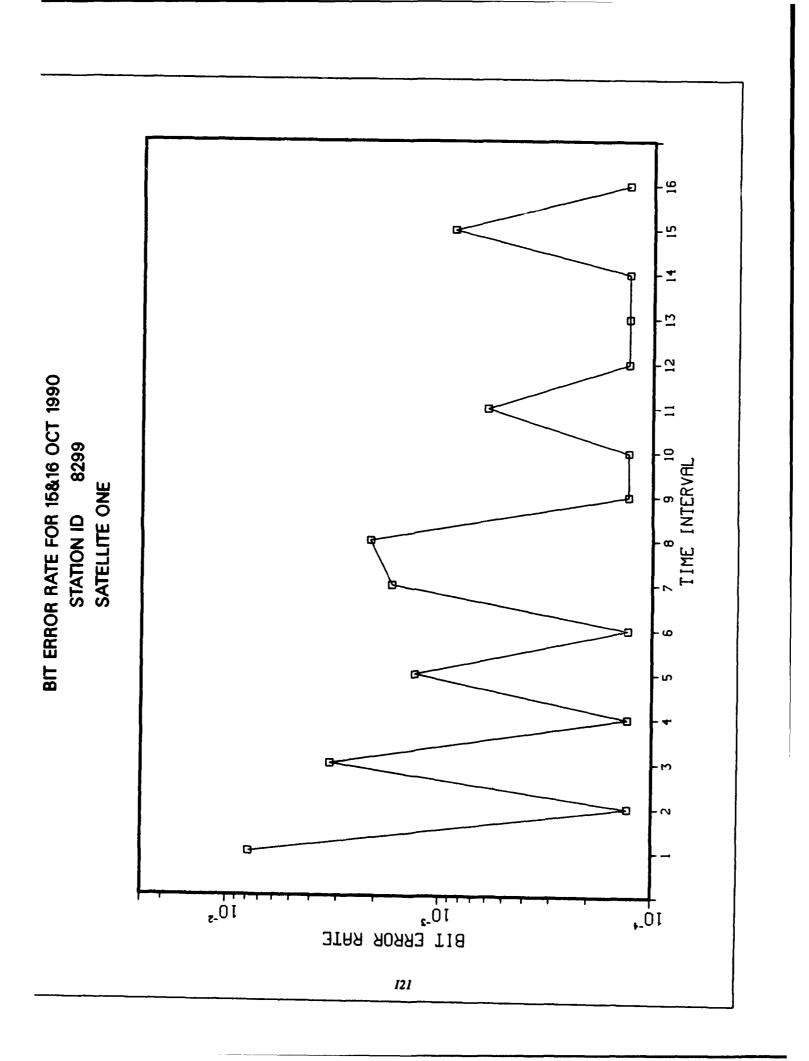


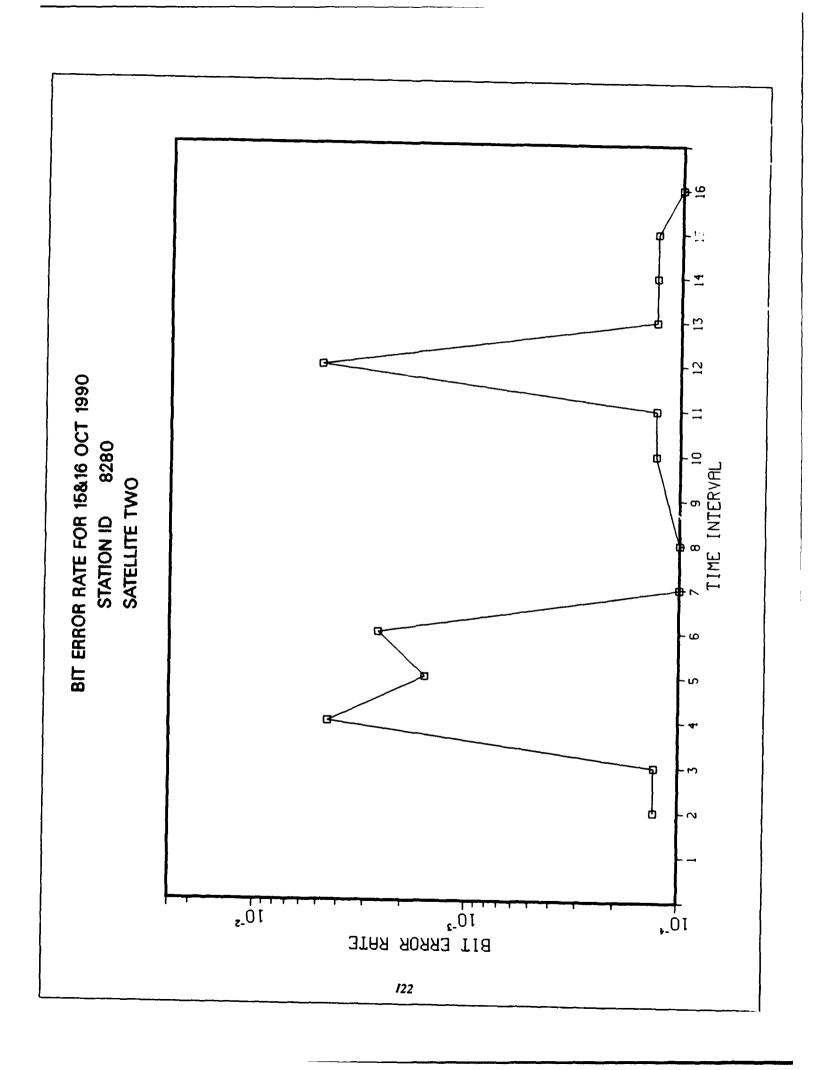


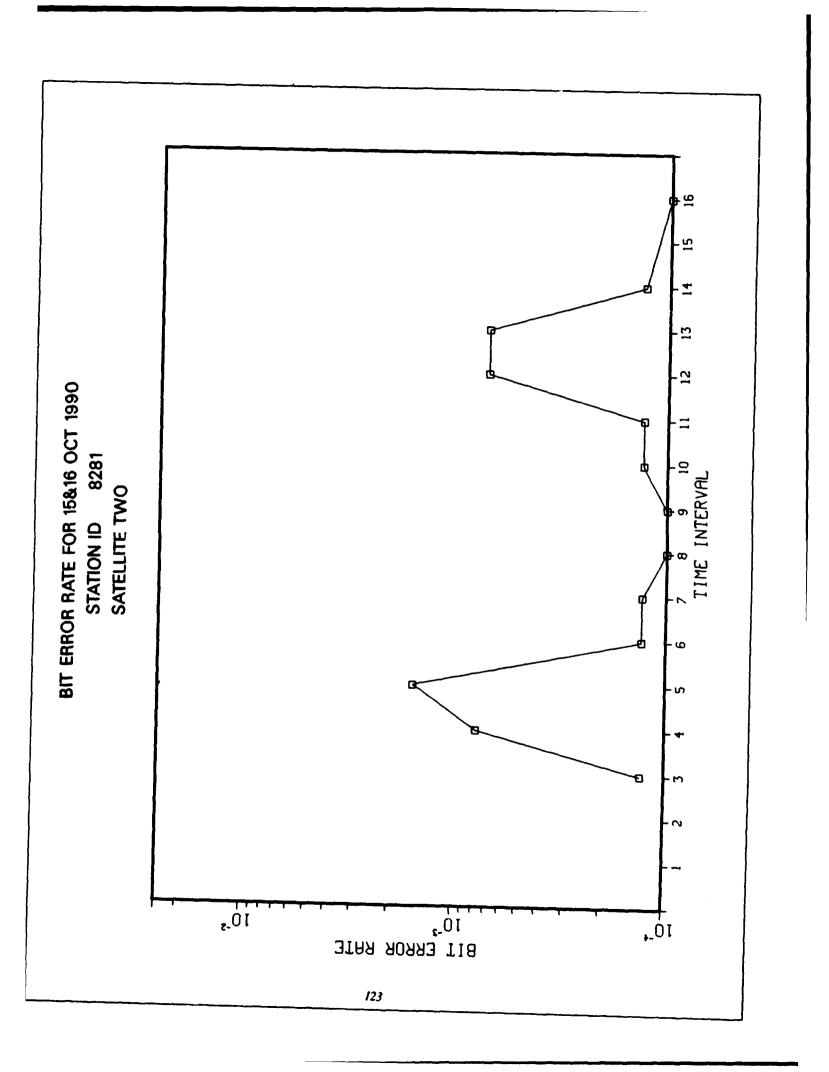


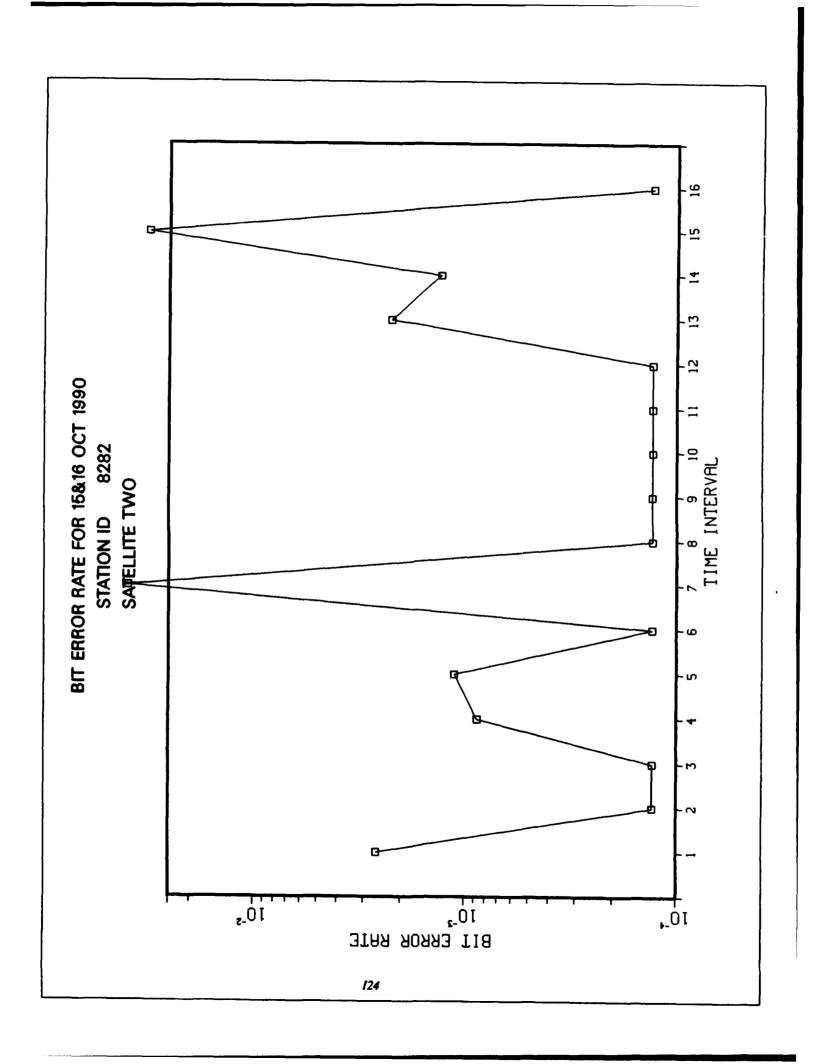


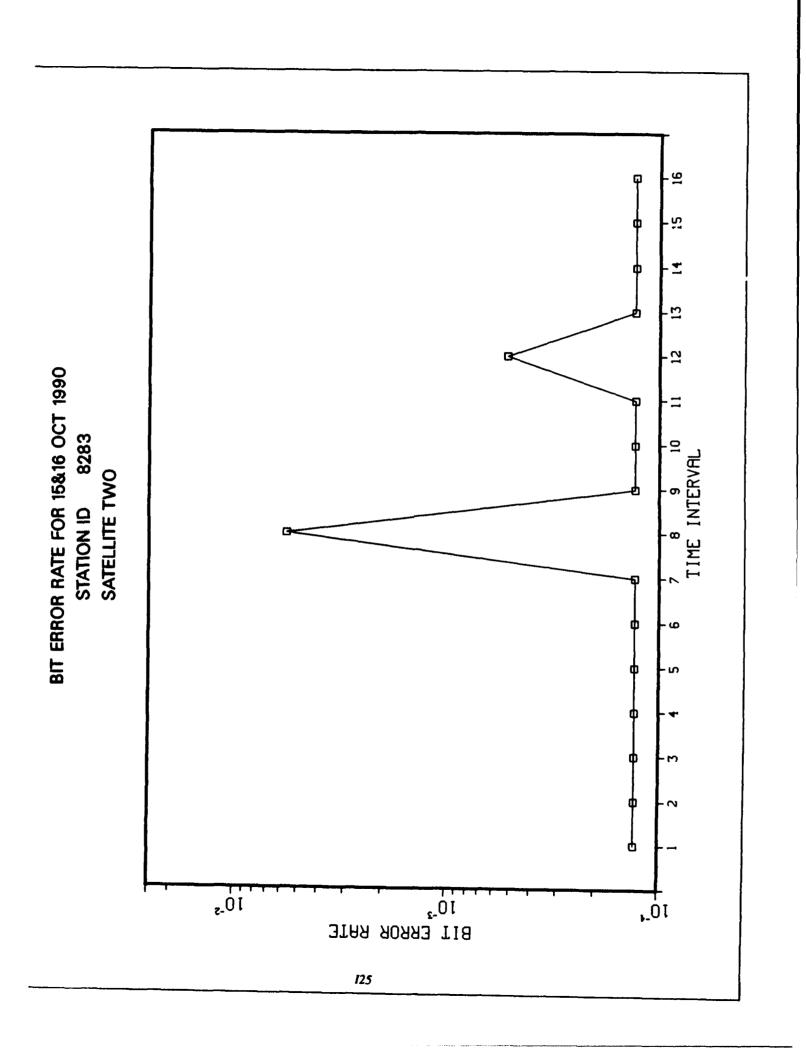


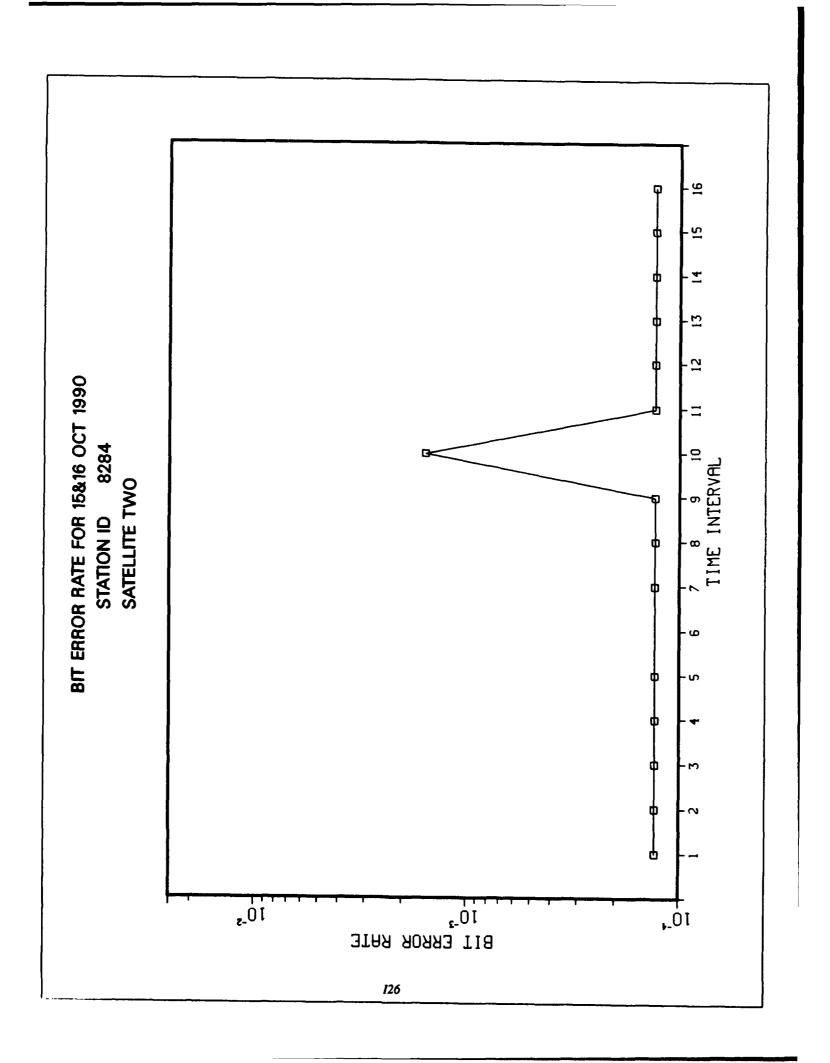


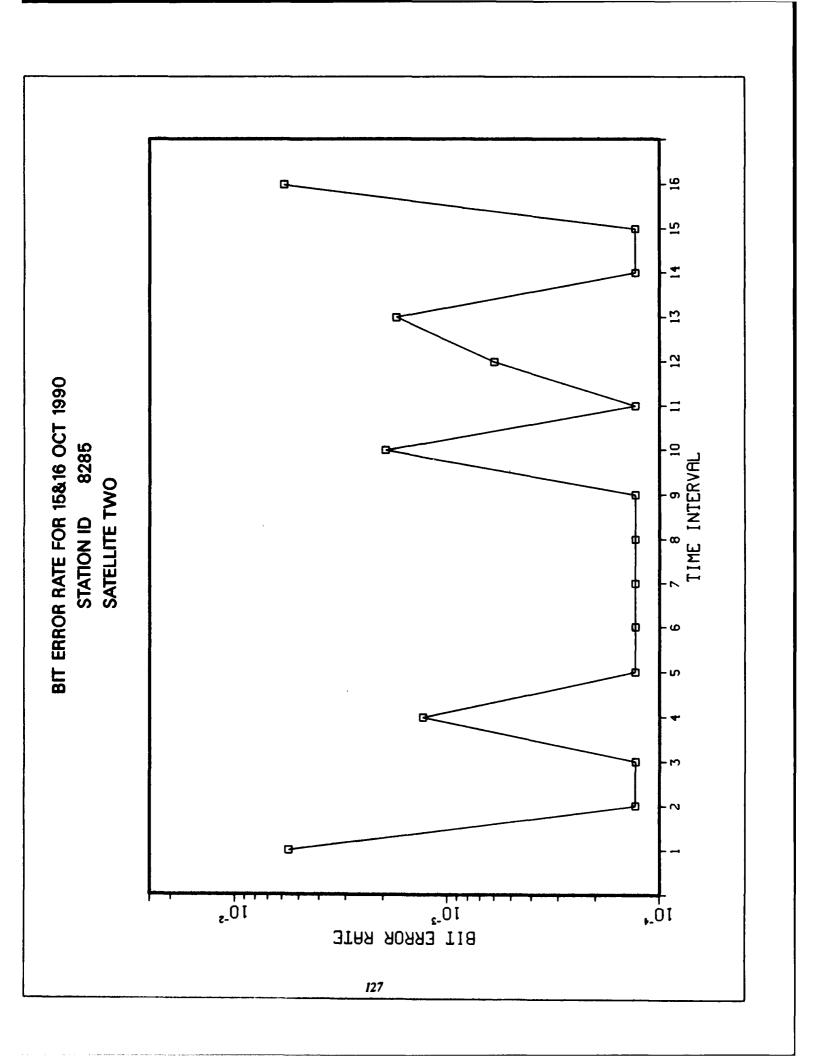


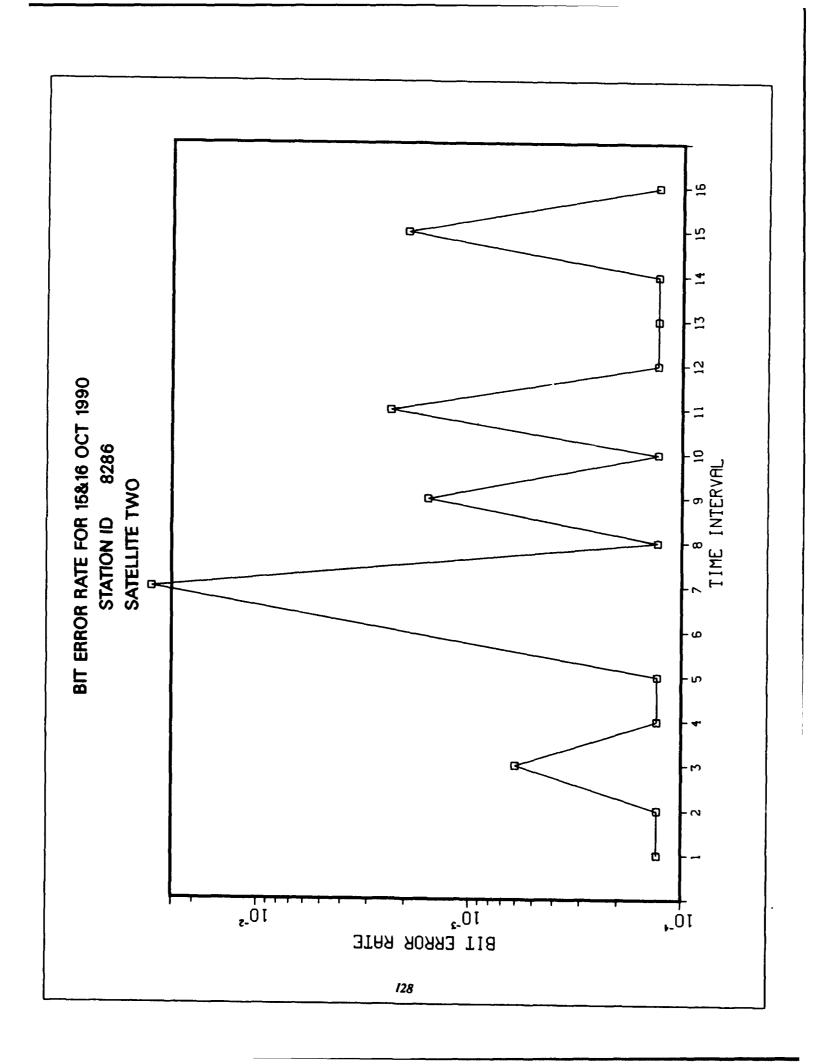


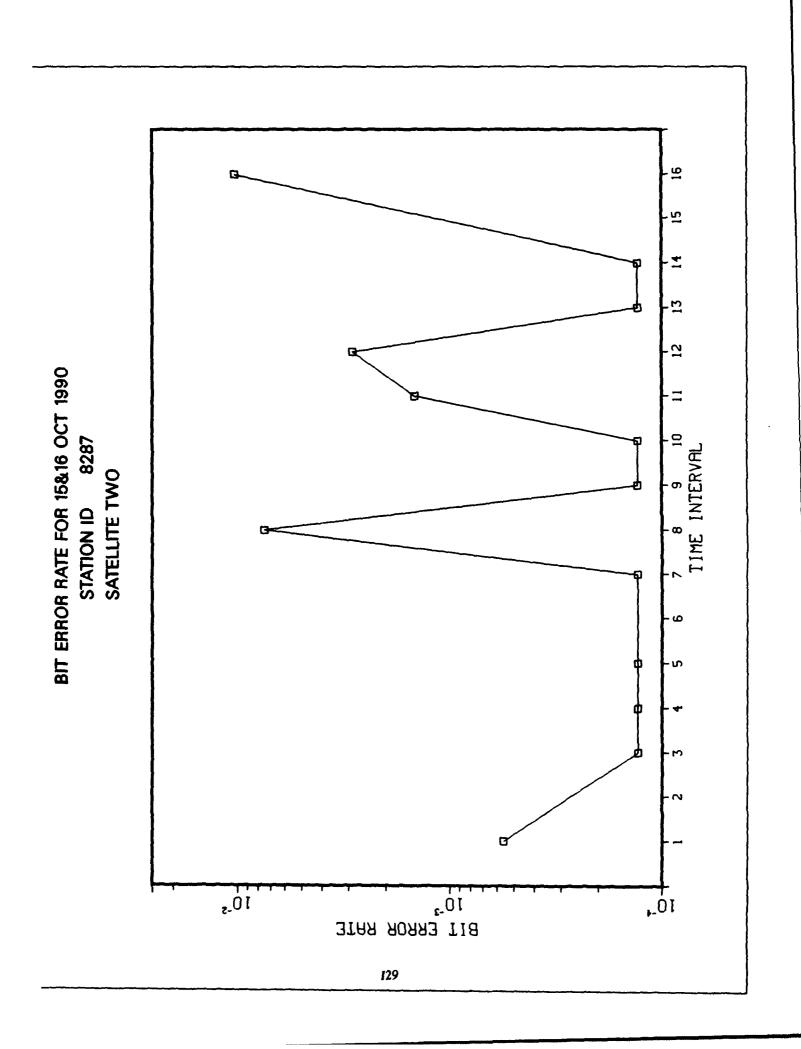


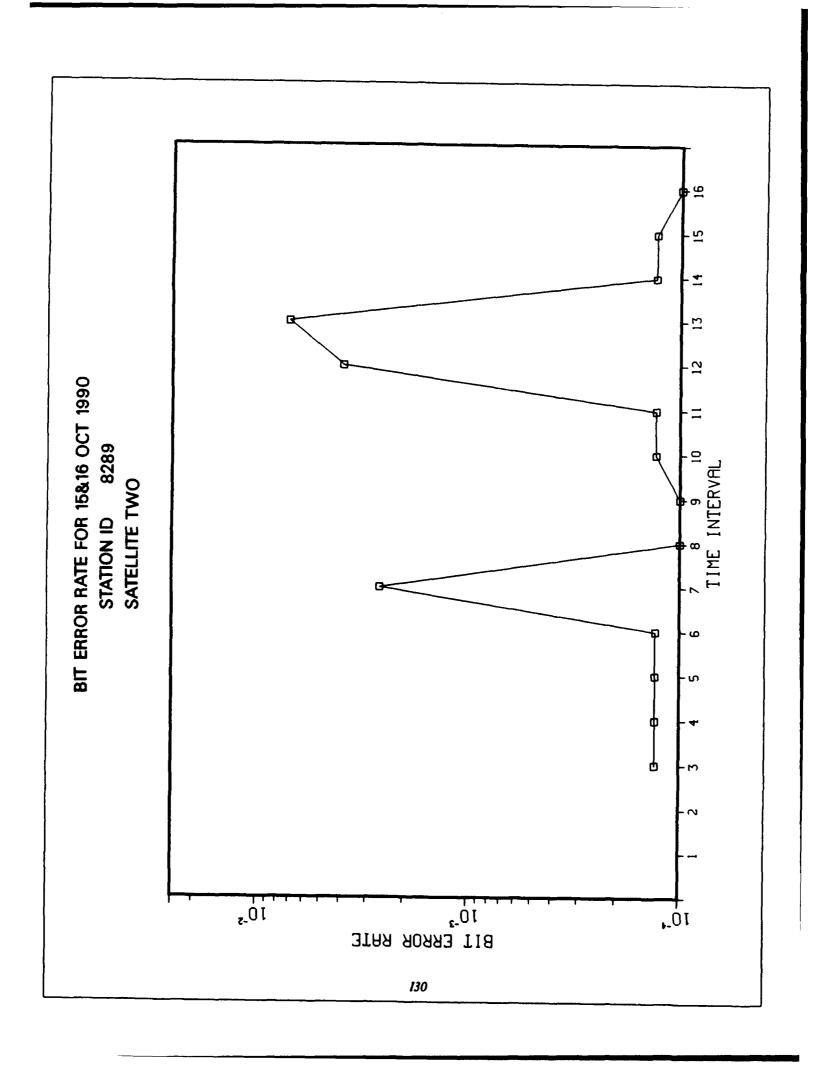


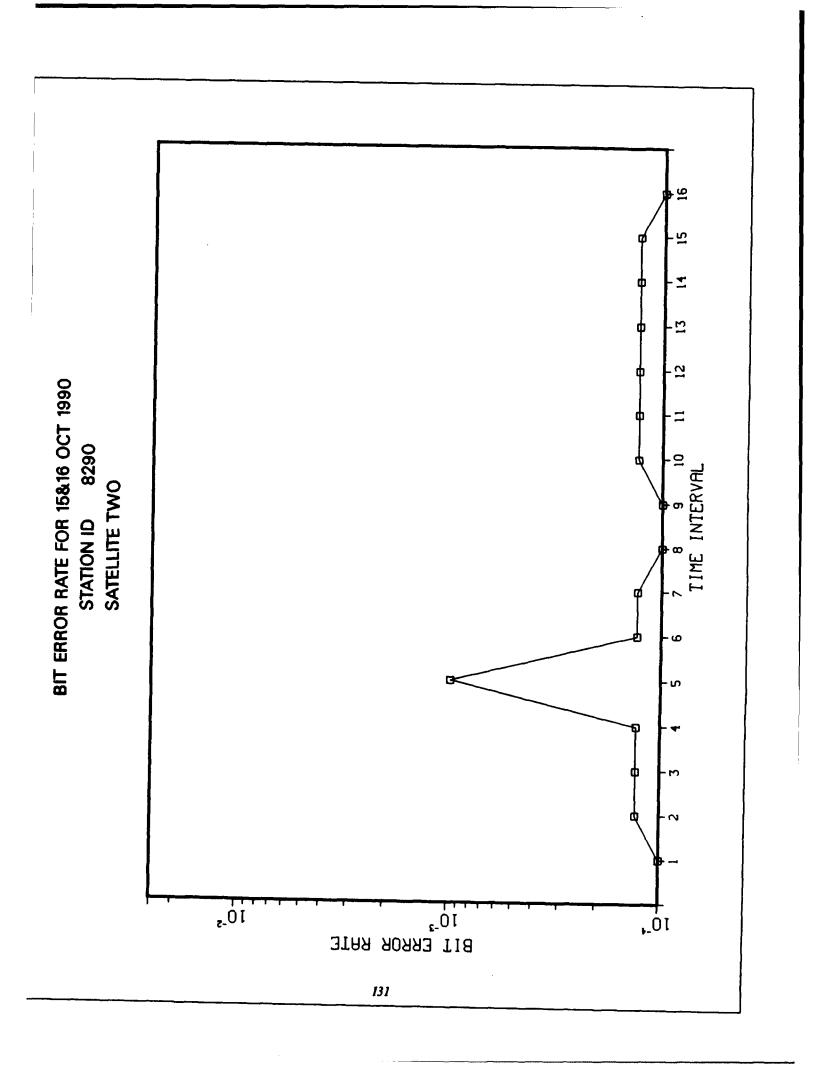


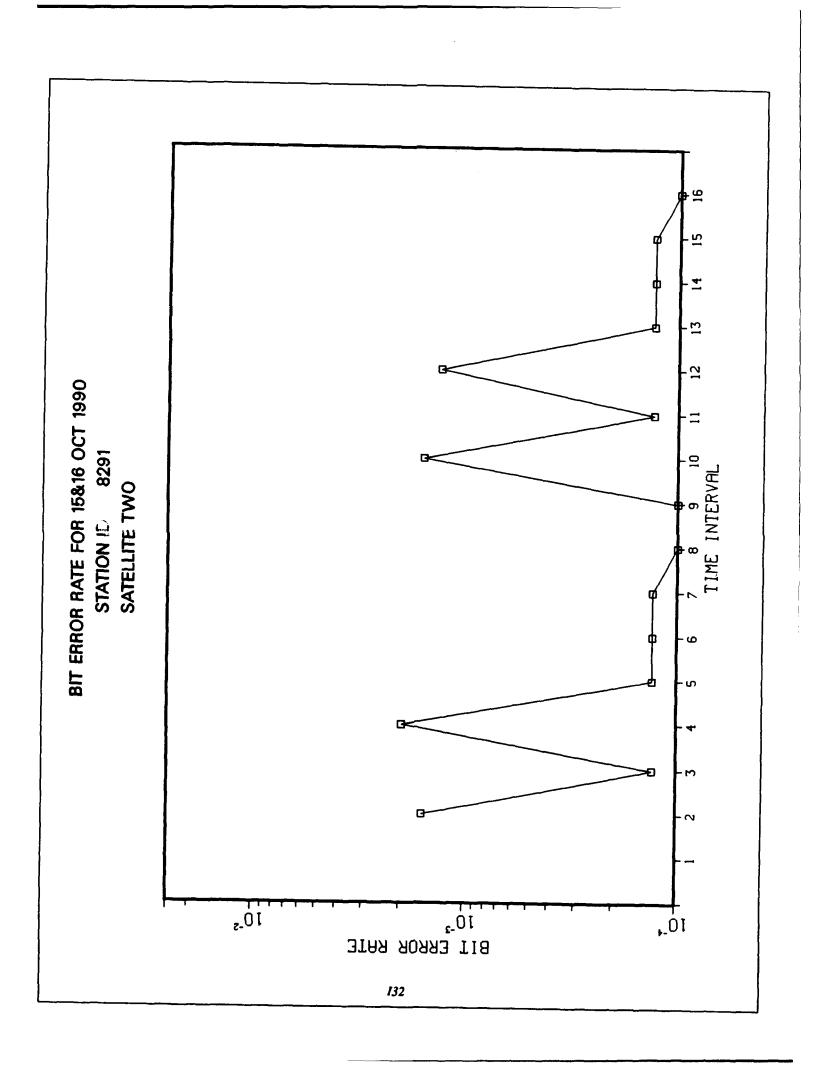


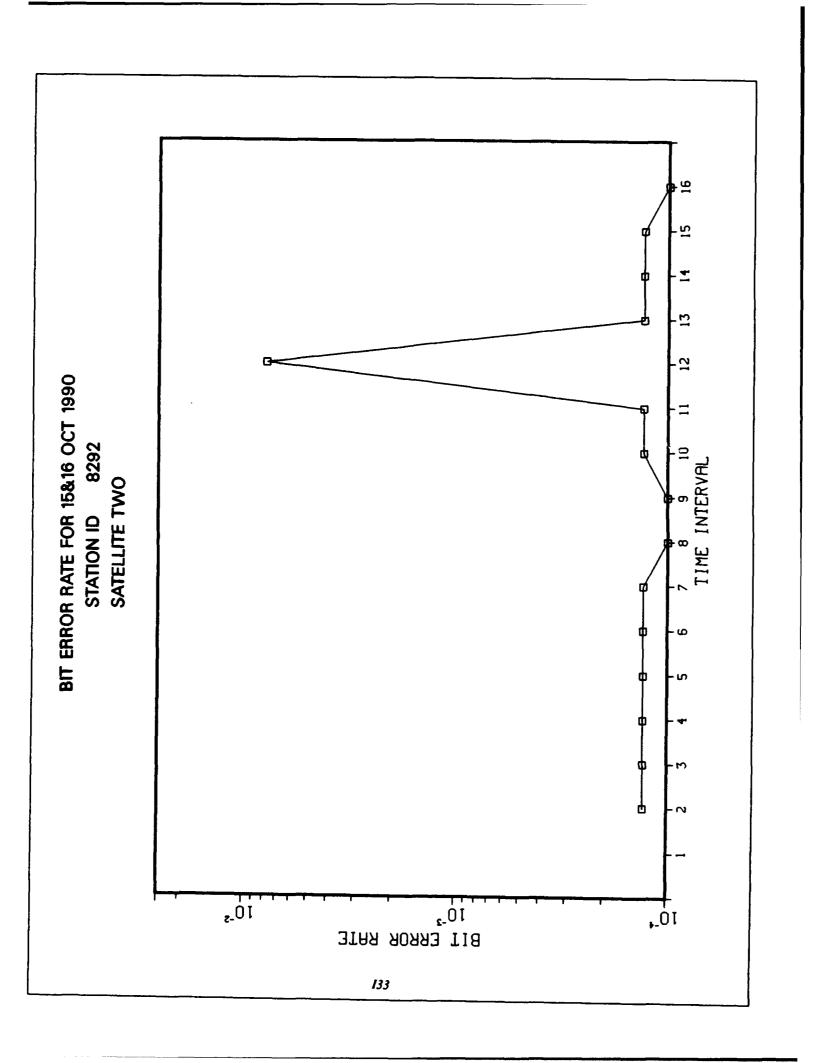


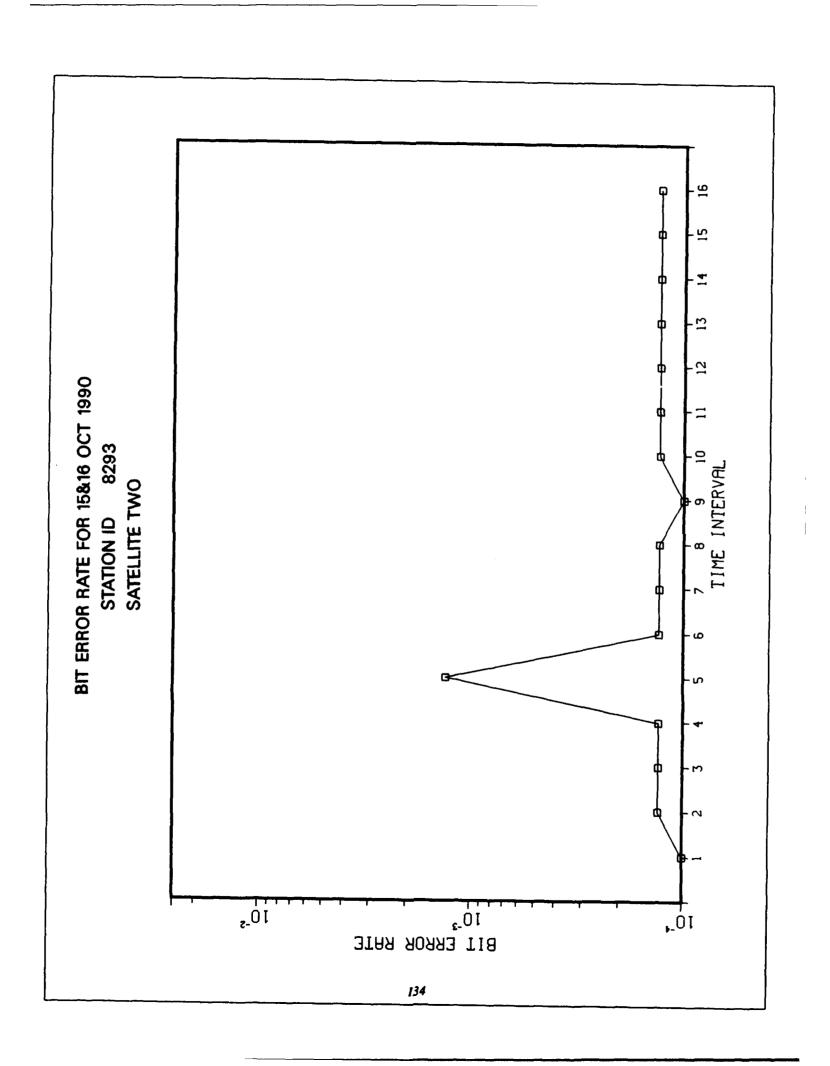


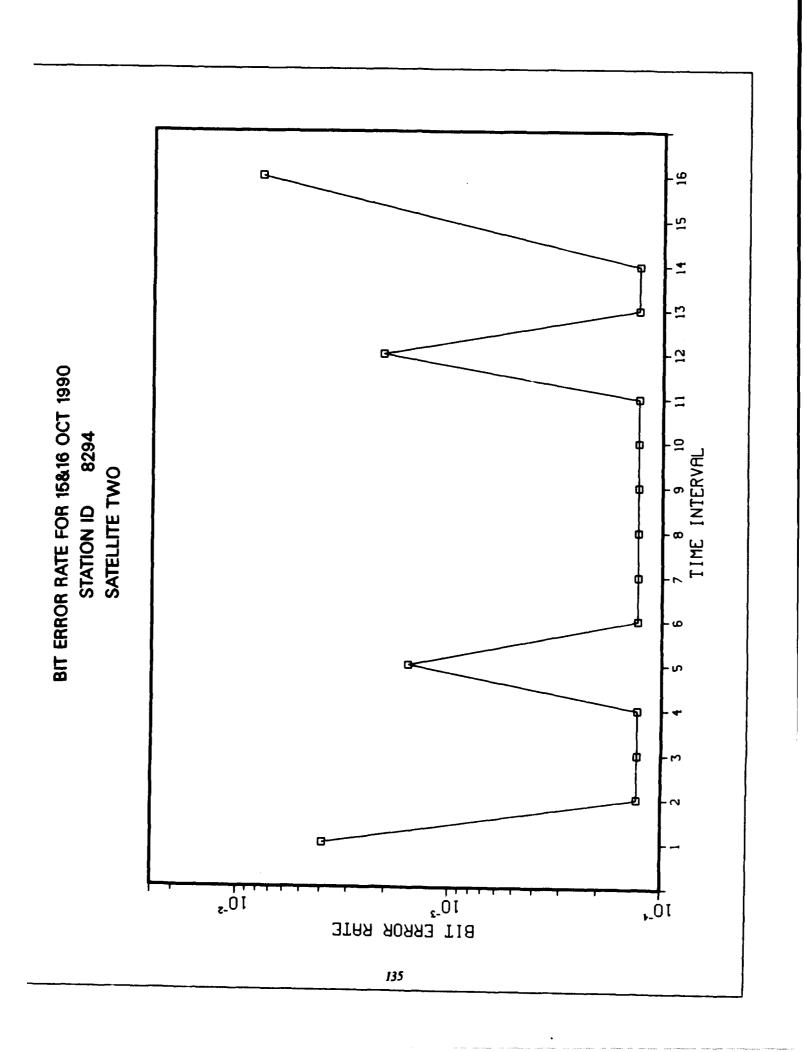


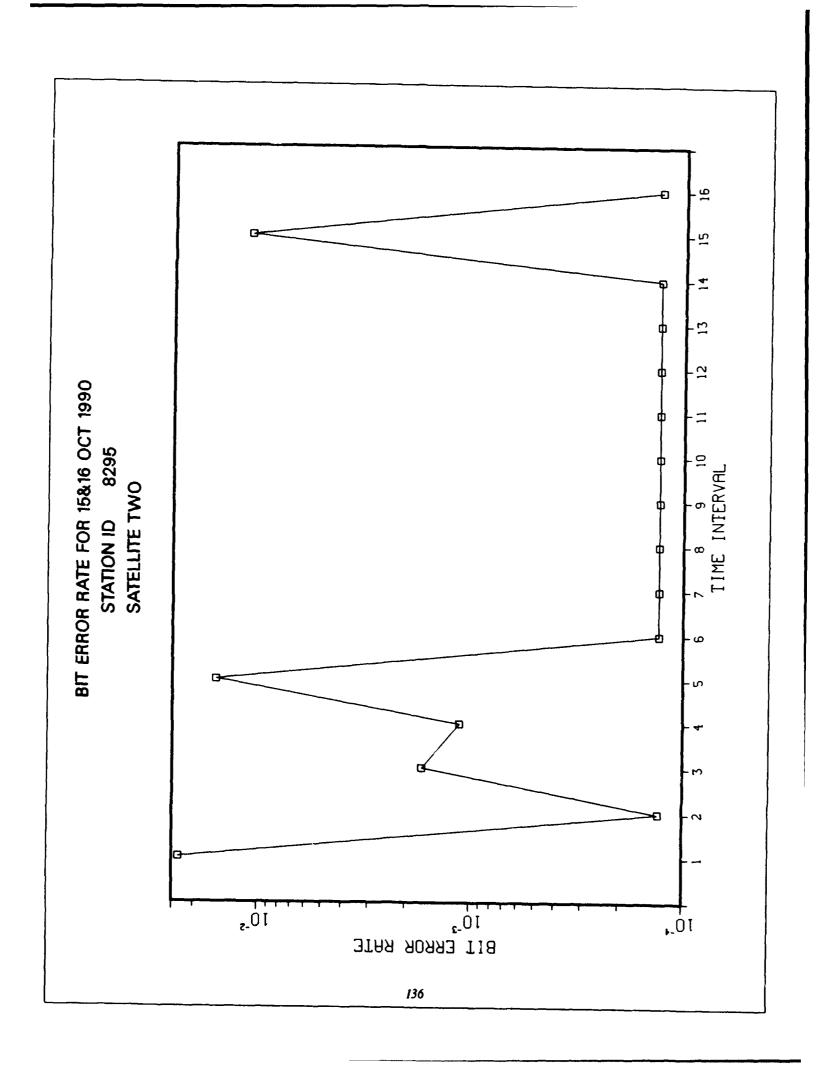


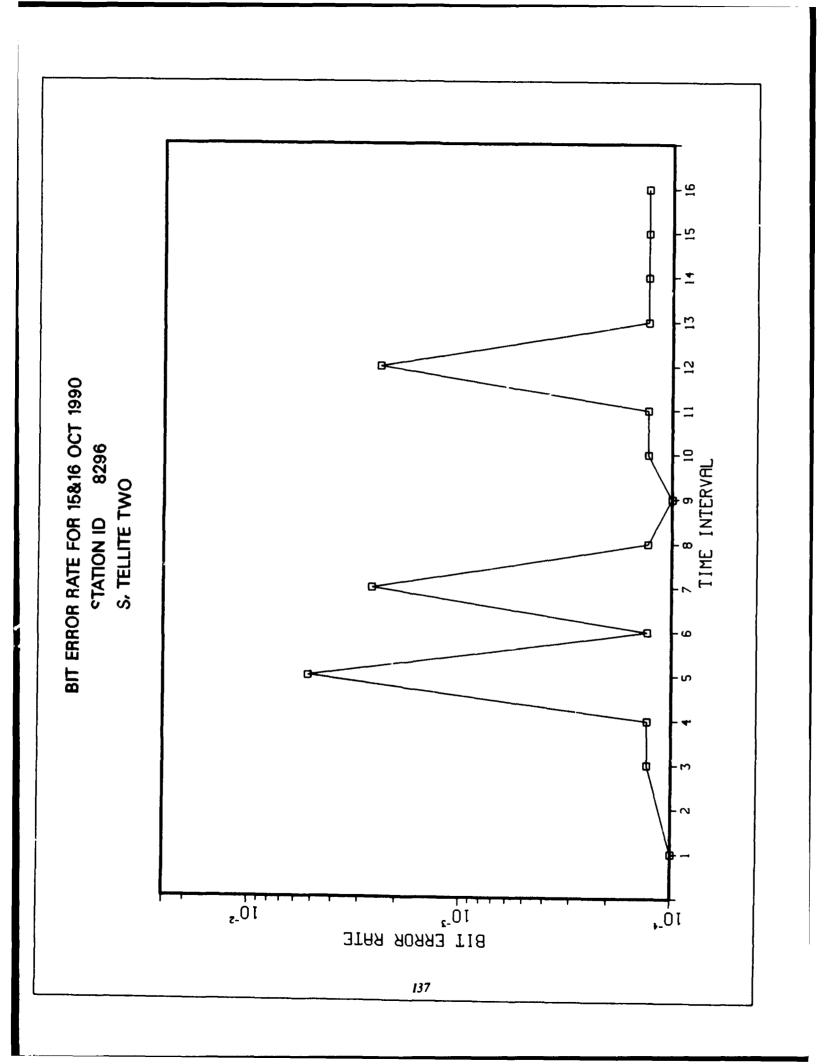


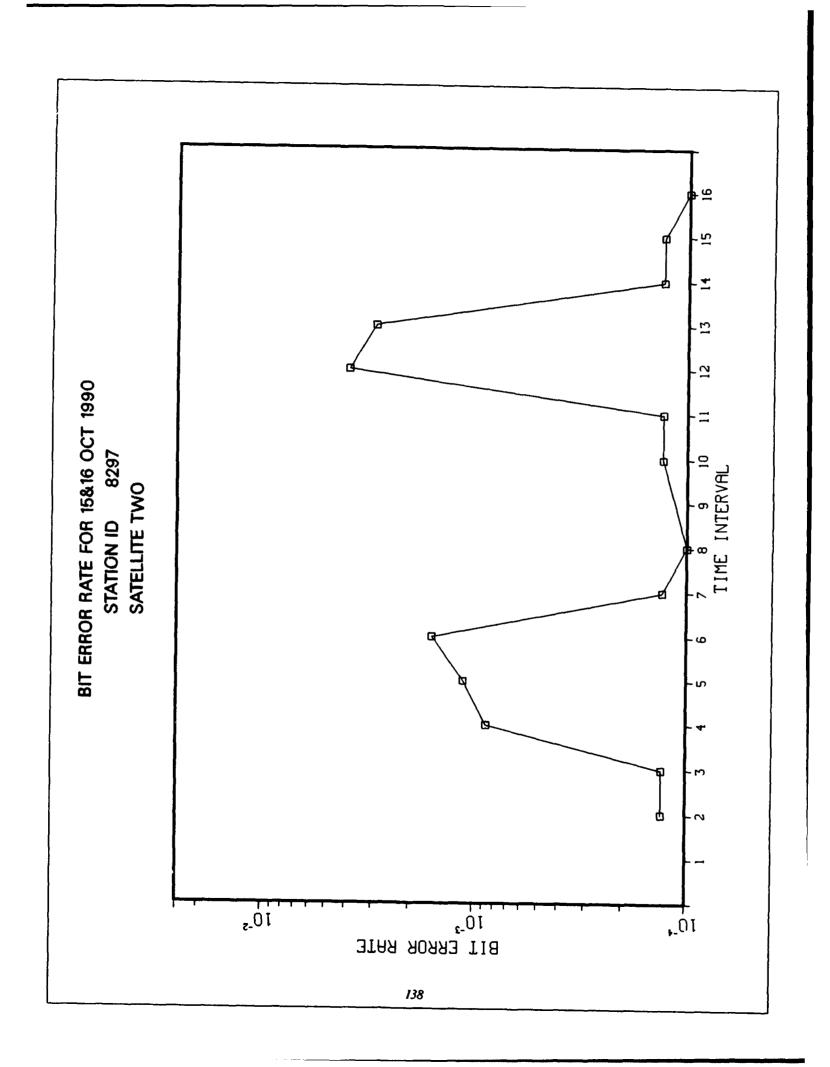


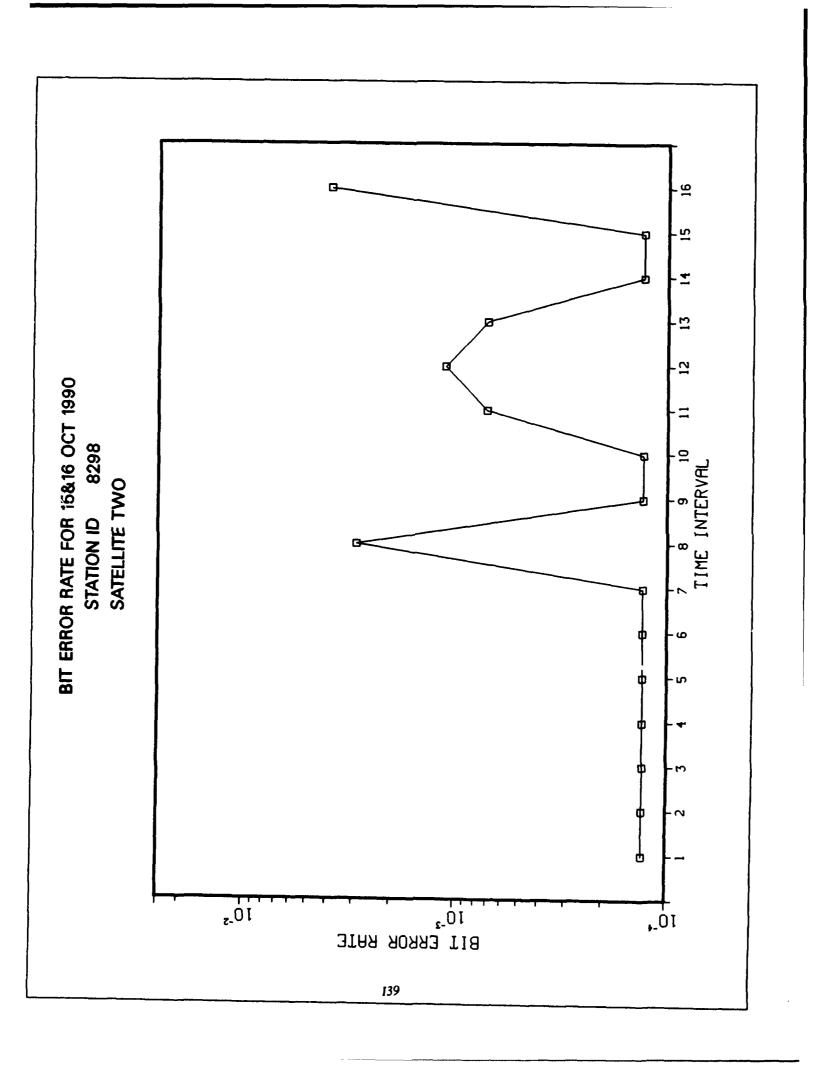


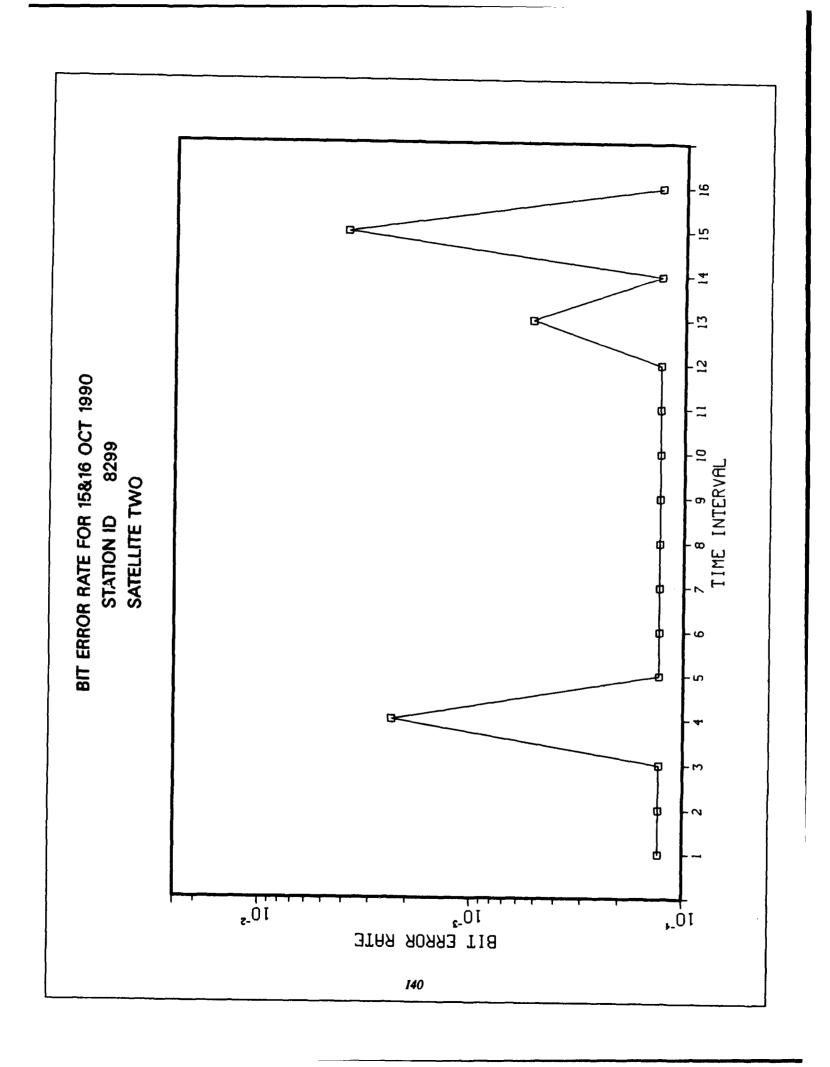


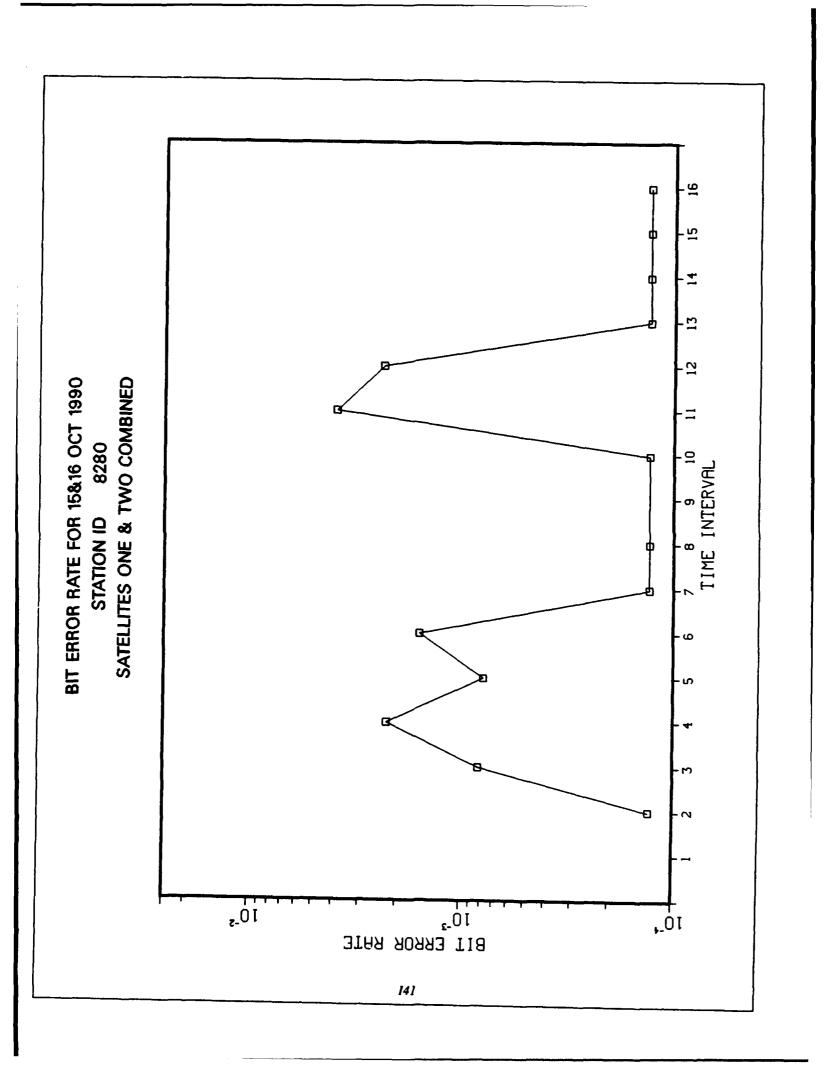


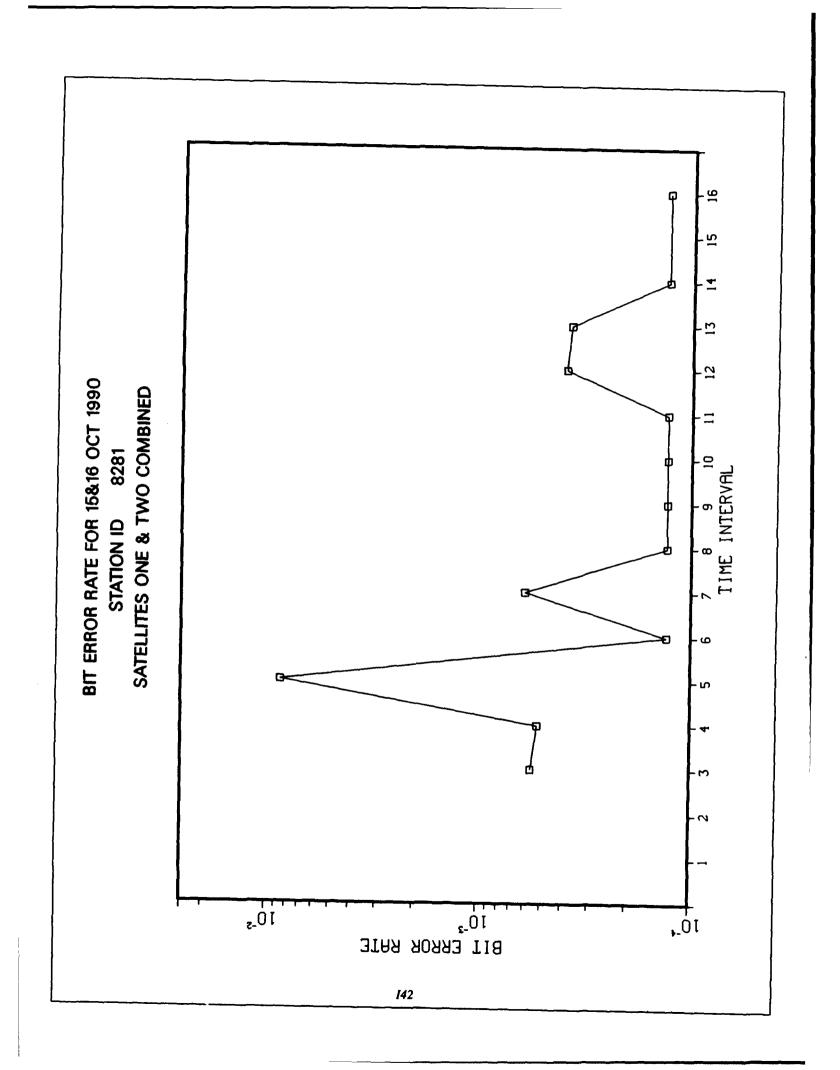


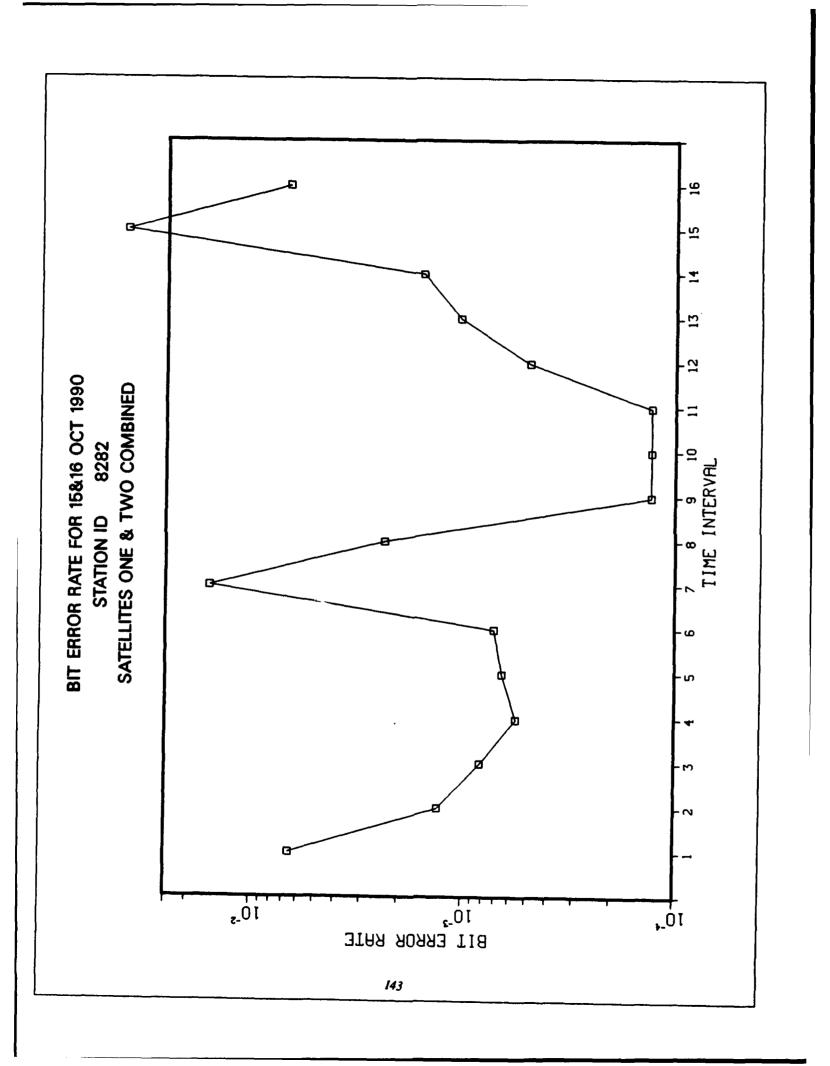




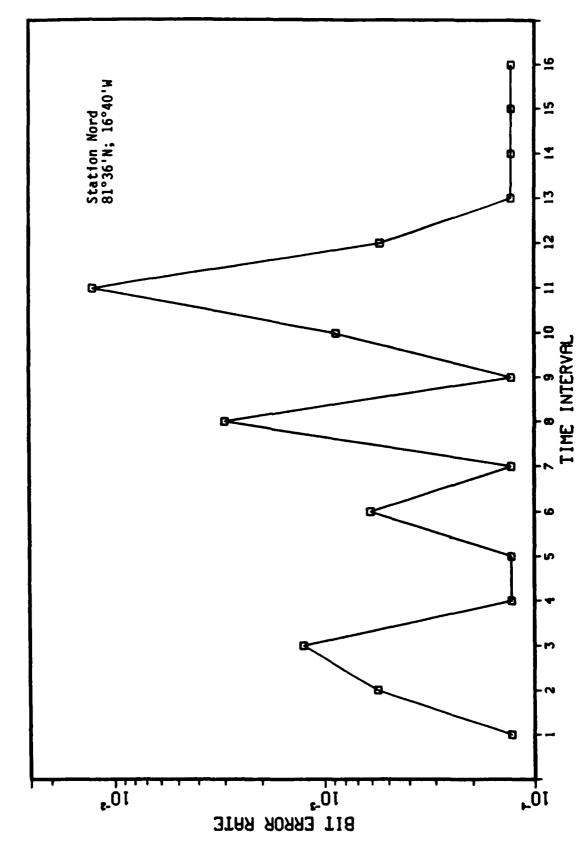


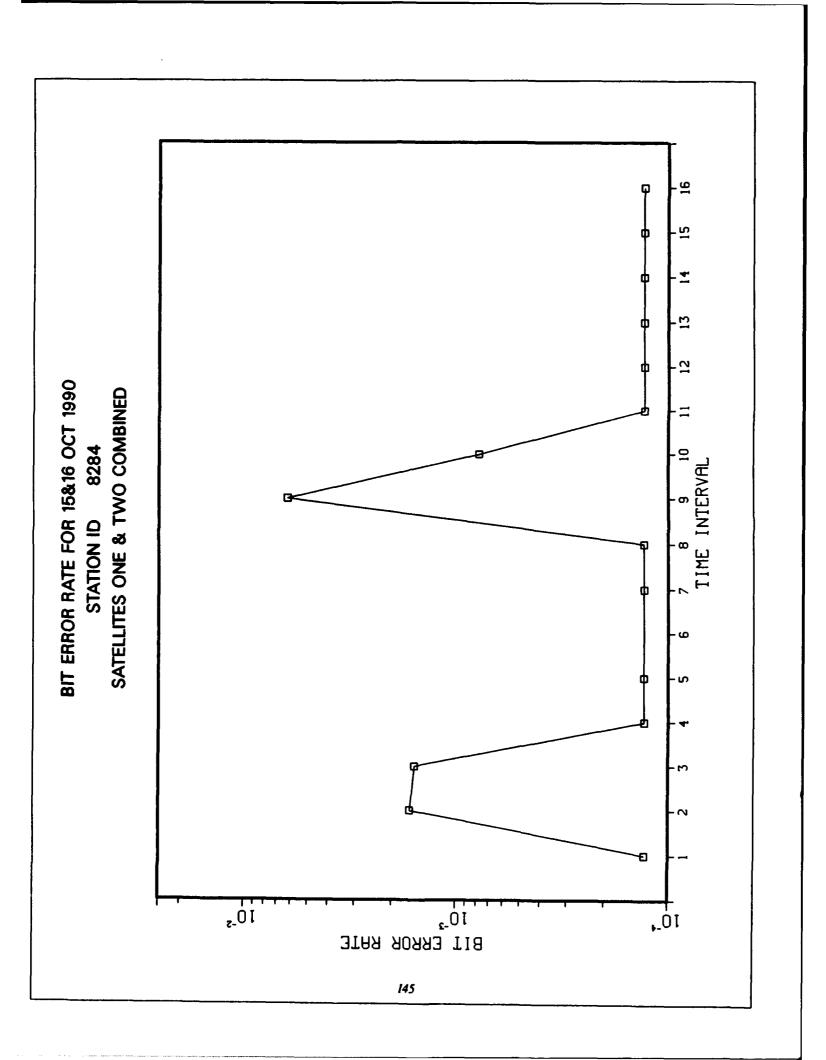


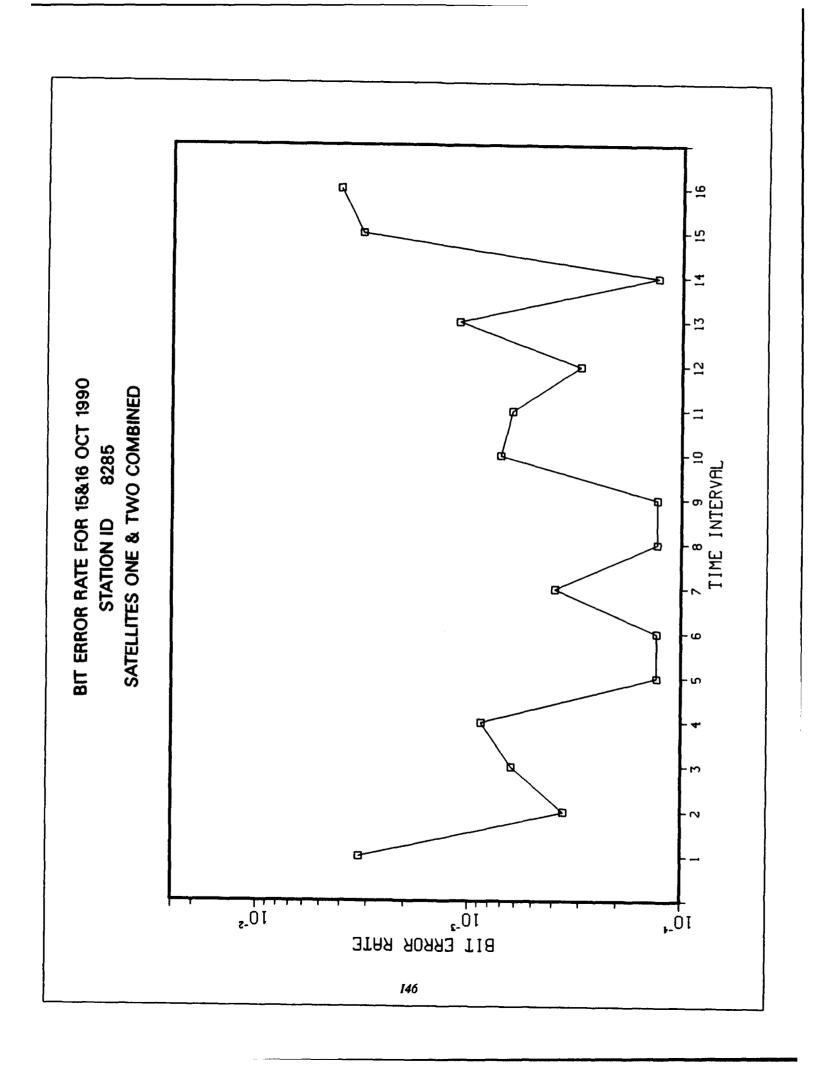


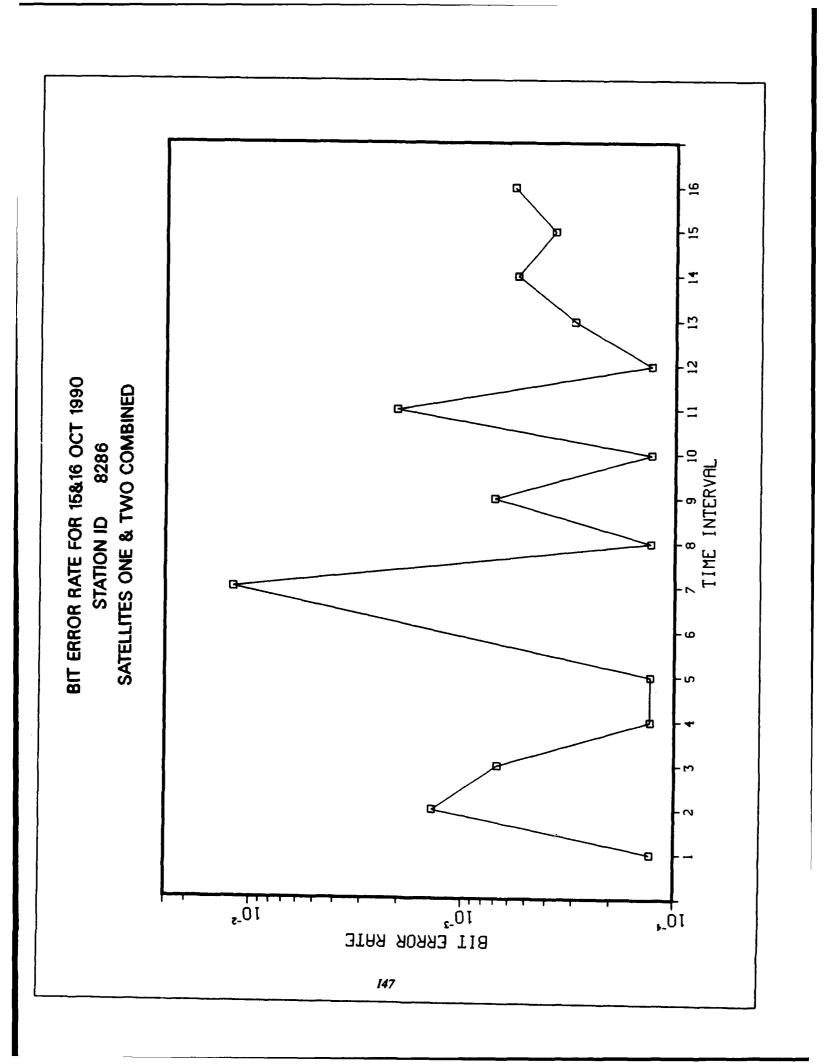


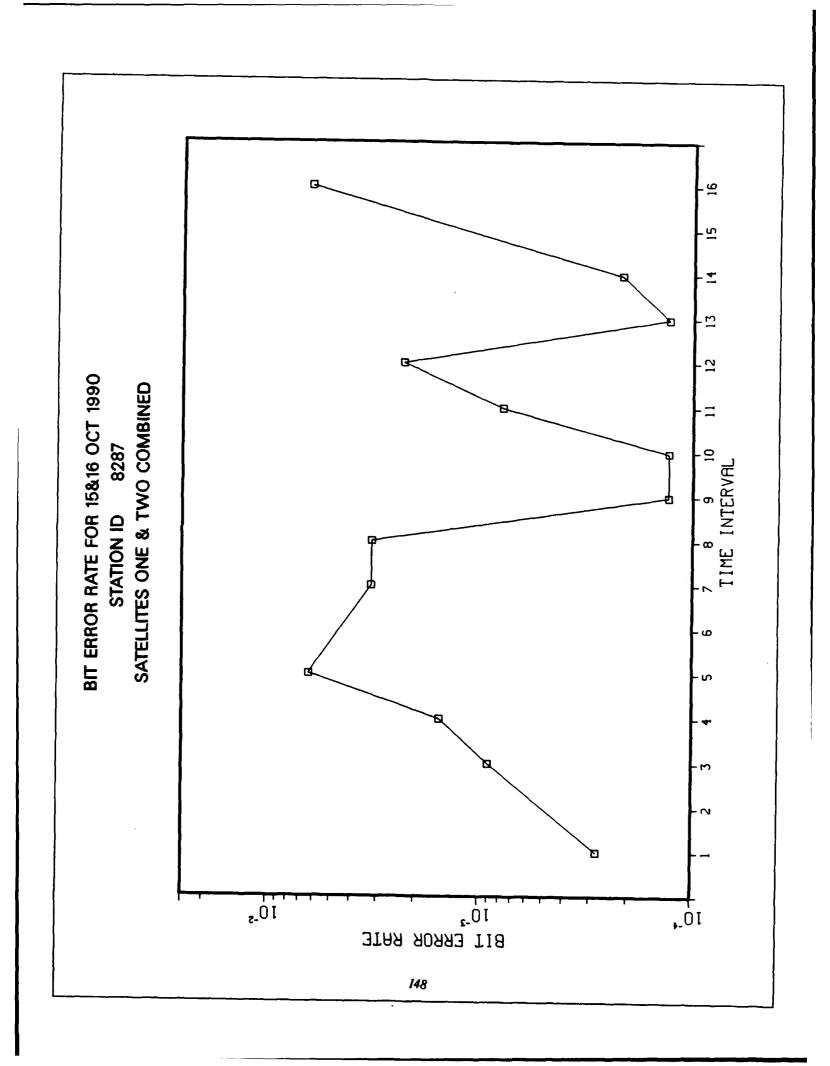
BIT ERROR RATE FOR 15&16 OCT 1990
STATION ID 8283
SATELLITES ONE & TWO COMBINED

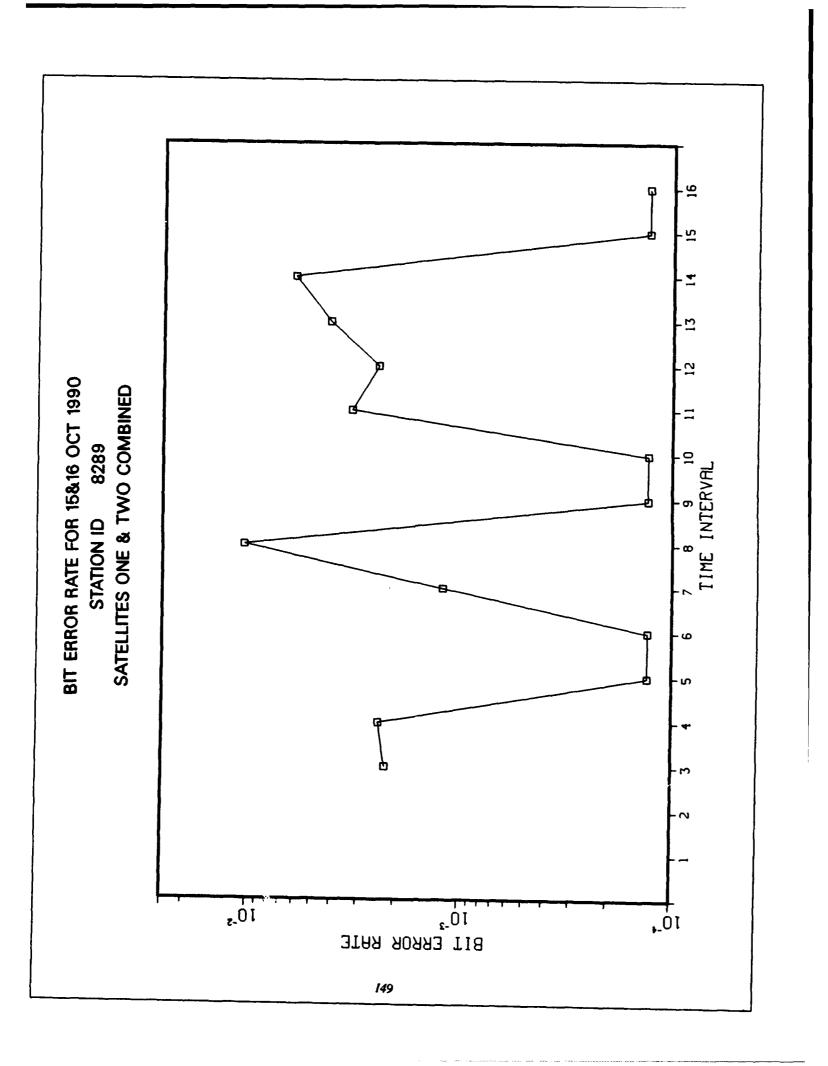




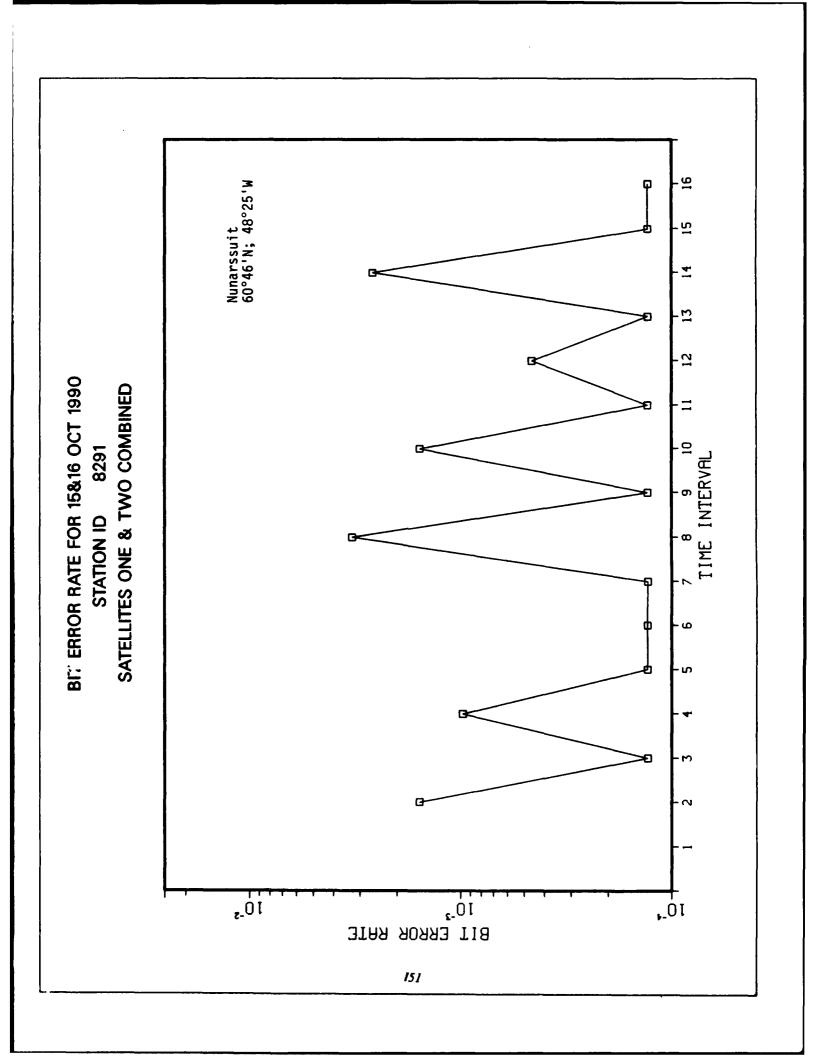


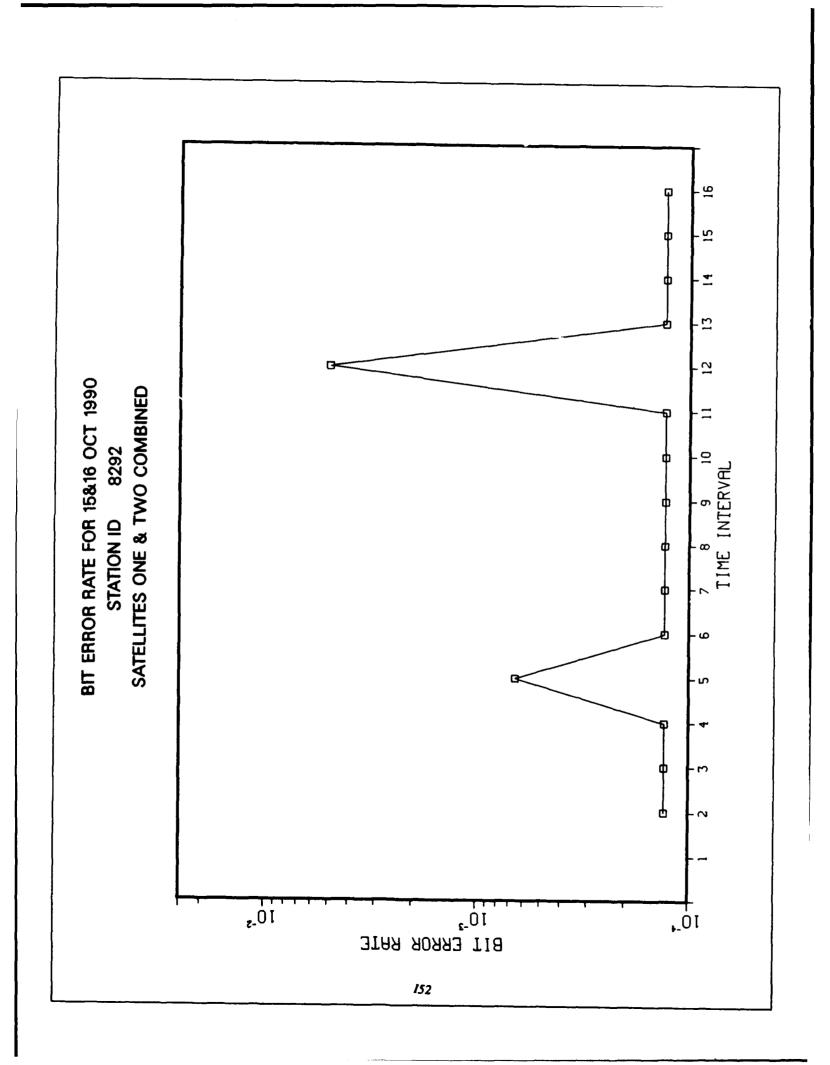


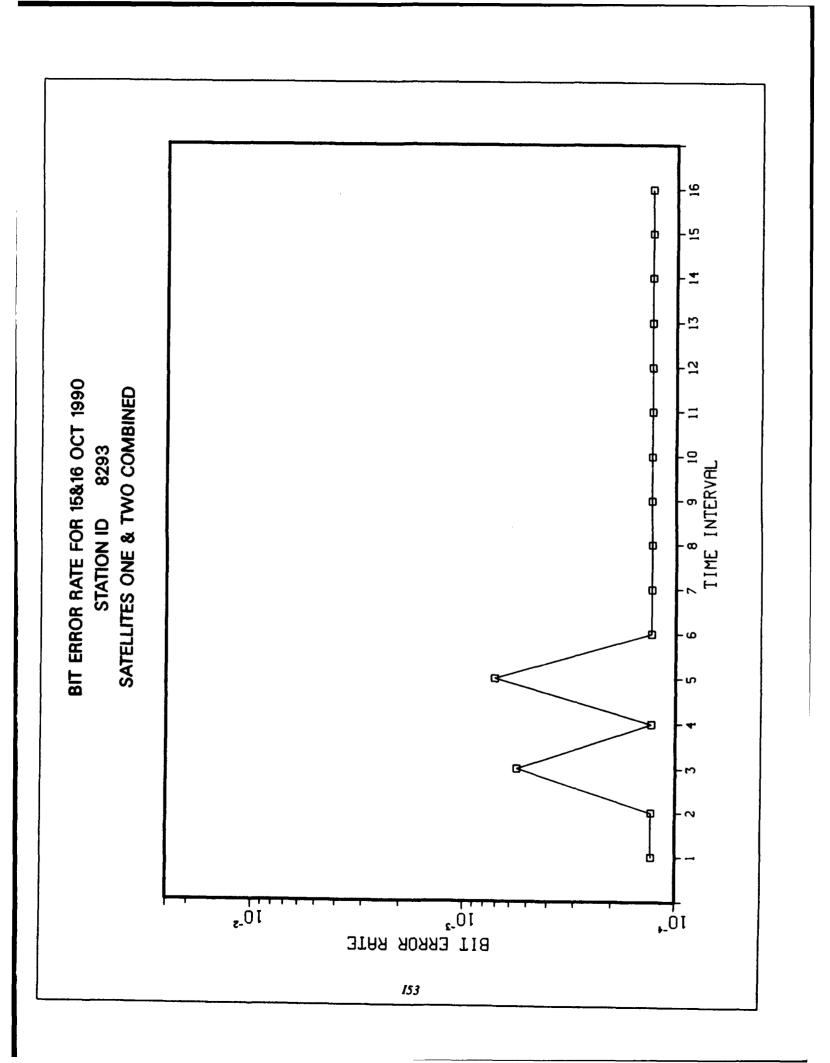


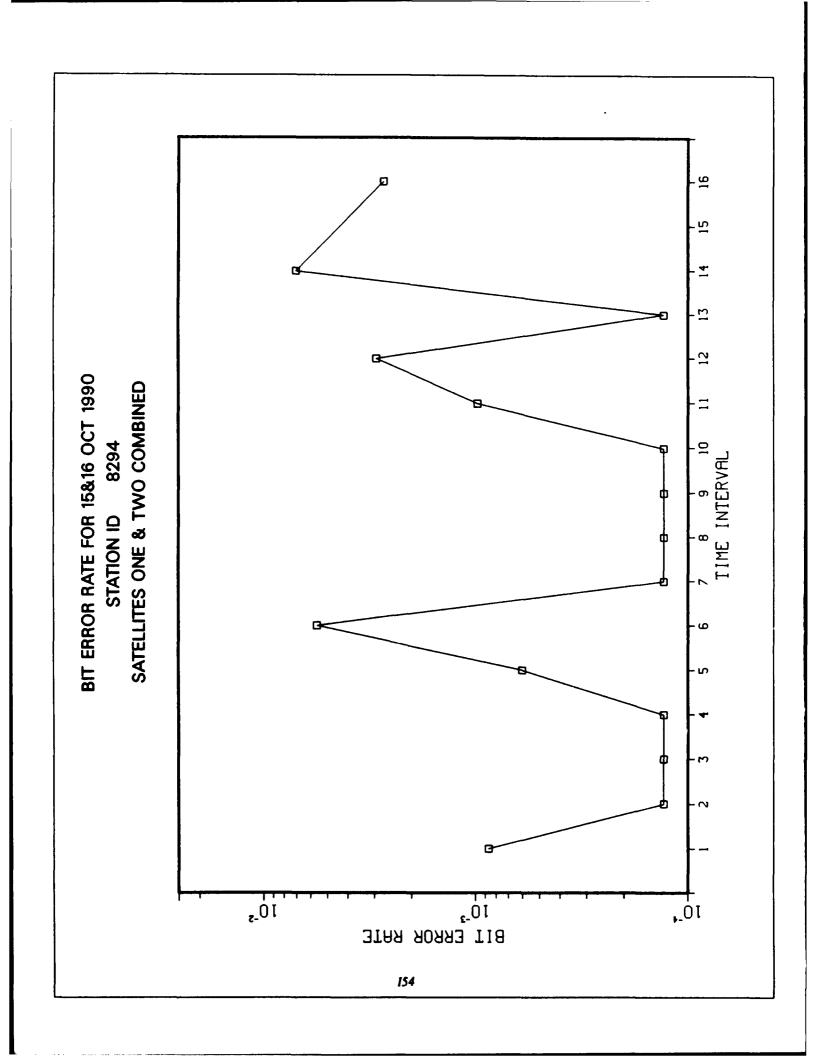


BIT ERROR RATE FOR 15&16 OCT 1990 SATELLITES ONE & TWO COMBINED 8290 STATION ID 10.5 811 ERROR RATE **₽**ot









Nugssuaq 70°41'N; 54°37'W BIT ERROR RATE FOR 16&16 OCT 1990 SATELLITES ONE & TWO COMBINED TIME INTERVAL STATION ID 10-3 BIT ERROR RATE 104

BIT ERROR RATE FOR 16&16 OCT 1990 STATION ID 8296 SATELLITES ONE & TWO COMBINED

